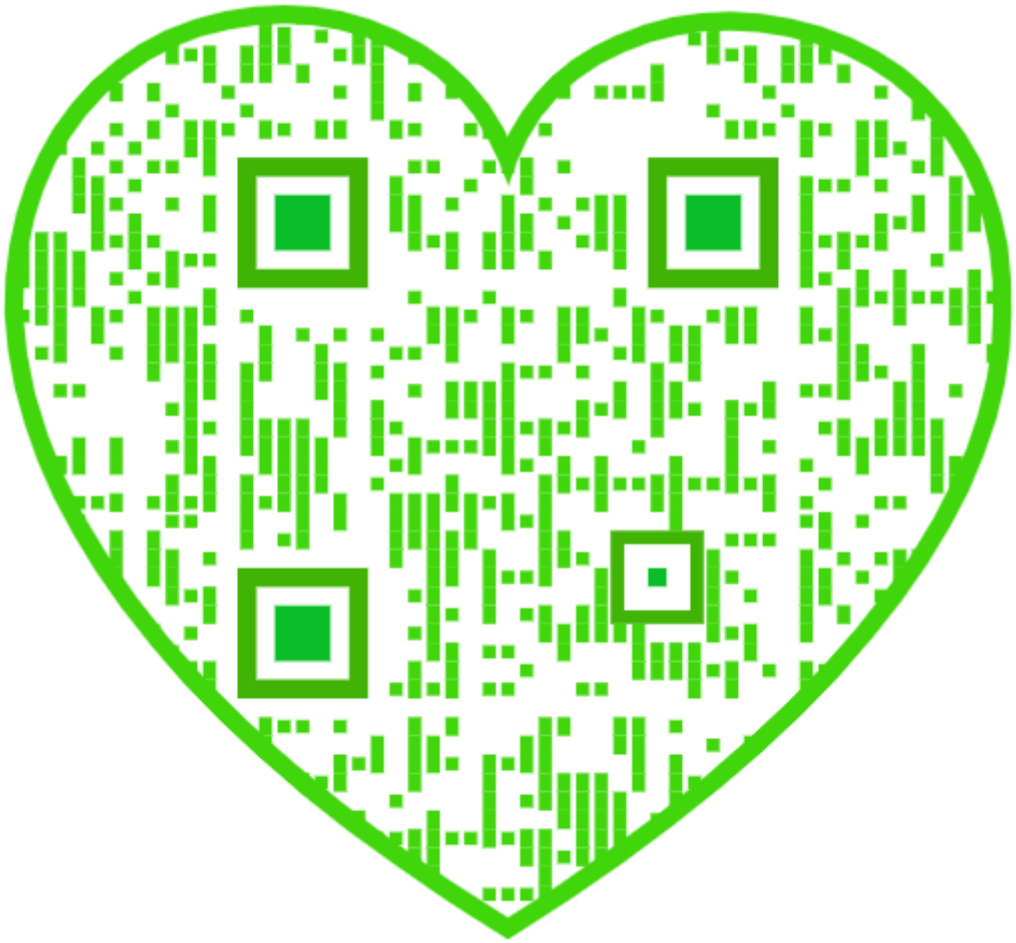


not all

FIRST PRINCIPLES

IN

PROGRESSIVE

BEE CULTURE.

A BOOK OF INSTRUCTIONS FOR HANDLING BEES WHEN DIVIDING, TRANSFERRING, UNITING, FEEDING, WINTERING, INTRODUCING QUEENS, HIVING SWARMS, DESTROYING FERTILE WORKERS AND MOTHS, STOPPING ROBBING, ETC., ETC.

—BY—

G. K. HUBBARD,

INVENTOR AND PATENTEE OF THE

HUBBARD BEE-HIVE.

1866.

Entered according to act of Congress, in the year 1866,
By G. K. HUBBARD,
In the office of the Librarian of Congress, at Washington.

RTYMK
·1H862
1856

PREFACE.

Personal observation, ranging for several years over a wide scope of country, has demonstrated that failures in bee culture are very largely caused by indifference and carelessness resulting from ignorance of the subject; and having never found a work that set forth briefly and concisely the rudimentary facts upon which successful bee management rests, with proper instructions for traveling through difficulties, and that yet could be placed before the people at a moderate price, this work was accordingly undertaken. Care has been taken to stick closely to facts, and discard any thing that tends to support mere theories and hobbies. Many a beginner has felt the need of just such plain, practical information as the scope of this work includes, and yet could hardly afford the profits of an entire day's labor for the sake of getting a book on the subject, and then frequently find it largely given to the support of pet theories, and the condemnation of the course taken by those who honestly differed.

Bee culture has engaged the attention of the intelligent and industrious of all ages; and to one who delights in investigating the marvels of creation, and being met at each step with new surprises, and encouragement to further research, this occupation can receive an unreserved recommendation. It is, therefore, hoped that this little work may encourage many to a further inquiry into the habits of these wonderful insects which Shakespeare describes as—

> Creatures that, by a rule in nature, teach
> The art of order to a peopled kingdom.

Confidently trusting that the effort will not prove a failure, I am ready to say, "What I have written, I have written." Read, and judge for yourselves.

G. K. HUBBARD.

"BEES."

AN ORATION BY G. K. HUBBARD, DELIVERED BEFORE THE ADDISONIAN LITERARY SOCIETY, LA GRANGE, IND., FEBRUARY 3, 1882.

Fascinated by the handiwork of the Infinite, the astronomer will spend the nights of years in exploring the trackless immensity of space, familiarizing himself with the heavenly bodies, their movements, and the laws which govern them. The man of wealth and leisure will travel about the globe, and gaze upon the entrancing grandeur of the Yosemite Valley, wonder at the pagan customs of the Orient, contemplate the massive St. Peters, and delight in the sublimity of the Alps. But the ordinary man, without wealth, and during his few hours of daily rest, can turn his attention toward things fully as wonderful by closely examining the apparent trifles within his reach. The worlds below us are as infinite as those above. Architectural skill is as wonderfully displayed in the habitations of our commonest insects as in the lofty dome or towering minaret reared by human hands. But among all the multiplied myriads of the insect families, the study of none is more fascinating than that of the honey-bee; not only because their instinct is of so high an order that it almost seems to deserve a place within the realms of reason itself, but also because a careful study of their habits, and a proper amount of care, will remunerate their keeper for his work at an almost incredible ratio; and this, too, by saving what would otherwise be entirely wasted.

In each colony, or family, there are three distinct kinds which differ in structure, habits, and function: The queen, which is the fully developed female, and the mother of the entire colony; a number of drones, or male bees, and thousands of neuters, or workers, which gather the honey, build the comb, and feed the larvæ; in fact, do all the work except laying the eggs, which is the sole duty of the queen.

In considering the process of the development of insects, what a wonderful field we have for thought and meditation! The active little fly of to-day, visiting leaf and flower in merry and sportive mood, was but yesterday the repulsive maggot, fattening on decaying nature. The repugnant caterpillar of to-day rests to-morrow in its variegated cocoon, only to burst forth as the gorgeous butterfly, reveling in all her decorative wealth among the beauties of nature. And in the honey-bee, as well as the other insects, these changes occur, extending through four separate stages of development: The egg state, the larval, the chrysalis, and the imago, or finished state. However, bees do not, like some insects, crawl about and feed themselves while in the larval state, but remain in the cell, eating only what is furnished by the nurse-bees. The worker will pass through these various stages, and come forth the perfect bee, in twenty-one days; the drone in twenty-four, and the queen in sixteen. Three days after the egg is laid it enters the larval state, which lasts seven days, during which time the grub is fed its rich aliment of pollen and honey, and changes in size from a tiny speck to a large white worm that almost fills the

cell. It then spins its cocoon, which is an extremely delicate substance produced in the glands of the grub's mouth. In the silkworm, this product is the source of silk; but the cocoon of the honey-bee is useless, and remains in the cell, giving it the dark color characteristic of old comb. At the end of ten days the cell is sealed with a light porous cap, and the bee enters its chrysalis state, remaining undisturbed and apparently lifeless until, on the twenty-first day, it emerges from the cell a perfect bee.

What causes the difference between a queen and a worker is in the way they are raised, as any worker-egg may produce a queen if it is placed in a larger cell, and the larva be fed on "royal jelly," a peculiar substance furnished in abundance to queens only. What a remarkable change is this! The royal cion simply receives a more sumptuous diet, and occupies a more ample habitation, and yet what a marvelous transformation! Not only are the progenitive organs developed, but the wings, legs, and sting, as well as size, form, and habits, are all wondrously changed.

The drones are the male bees; and, so long as there is a prospect of their usefulness, they are well cared for by the workers; but after the swarming season is past, and there will be no more young queens to fertilize, because of their uselessness and gormandizing habits they are banished from the hive — not stung, for this would be fatal to the worker as well, but driven out, where, from want of food, they submit to that fate which seems to be a part of the inexorable law of nature. They are raised in cells a fourth larger than those for workers; and as the queen can lay either kind of eggs at pleasure, they are accurately placed in their proper cells, and cared for accordingly by the nurse-bees.

Thus we find three kinds of bees, differing in structure and habits, positively necessary for the maintenance of the colony, each one doing its share, and all laboring contentedly, from the queen, who is absolute monarch, and walks in stately majesty about the hive, depositing, in certain seasons, from three thousand to four thousand eggs per day, down to the unpretending little worker only twenty-four hours old, that delights in contributing his mite by carrying food to the larvæ, and aiding in the other work within the hive.

The loads of yellow substance carried in abundance into the hive are not comb, as many suppose, but *pollen*, a fine dust gathered from the anthers of flowers, and is used solely to feed the brood in the larval state. Botanists tell us that this pollen, or fertilizing dust, must of necessity intermix with the different flowers of the same species, if any seed is produced. The bee, in his continual round of activity in searching for the nectarian drop, serves as a most important medium by which the bloom is fertilized, and the production of seed made a possibility. Here, then, we find the bee supplying another link in the system of Nature's great harmonious completeness; and in the face of the supervision and direction manifest in all matter, from the frailest animalcule to the countless systems of worlds inhabiting the abyss of space, who is prepared to say that all is the result of *Chance?*

The comb grows on the bees. It is a secretion of wax that collects in little wax-pockets on the under side of the abdomen, which they are enabled to produce by eating a large amount of honey—from seventeen to twenty pounds being necessary to produce one pound of comb.

Honey, which is the nectar secreted by flowers, is extracted by the bee's tongue, and carried in the stomach to the hive, where he regurgitates his precious load, either giving it to the bees or storing it in the cells.

Their constant devotion to the welfare of the colony is manifest in every act. They not only labor with unabated zeal, but are willing, should danger present itself, to sacrifice their lives for the home they honor; and as a matter of economy, when weather will permit they invariably leave the hive to die.

Is not man, despite his achievements, forced to pause and admire the work of this busy insect? When we consider how the right amount of heat is produced to hatch the brood, ventilation cared for, the larvæ cared for, or at the proper time capped over, the comb built, and the honey stored, and further realize that it is all done in total darkness, do we not, then, consider a work more wonderful than the achievements of man?

Numerous are the practical lessons taught us by this wonderful insect — the industry of the worker and indolence of the drone being proverbial. And it is remarkable how the harvest season and shining hour are improved by the one, while the other basks in glorious idleness. If the industry of the worker does not put to shame the man of restive disposition, the fate of the drone should spur him forward to usefulness, for fear that *his* day of opportunity will pass unimproved, and, like the drone after swarming season, he will be dragged from the stage of action and consigned to oblivion, while his active brother enjoys the sweets of a useful life and the contentment of a provisioned home.

How forcibly the habits of bees substantiate the maxim, "In union there is strength"! Who could estimate the good that would be wrought upon us as a nation, if the people in any good cause would move forward with the harmonizing ideas manifest in a colony of bees! Harmony is the first law of nature; and what in our country is more necessary? for strife and faction destroy society, weaken the Church, and shake the very foundation of government.

Like the bee who will sip honey from the rankest weed and most poisonous herb, and depart uninjured, so we should strive to profit by the good we encounter, and remain untainted from the evil which surrounds us.

Are you made impatient by the reading of books of travel? Do you envy the wealthy their opportunities for extensive observation? With a natural history or botany to direct your thoughts, *explore your own garden;* and there, as the book of nature unfolds its mysteries, will be found the true wonders of the earth, while the infinite display of creative wisdom commands your highest admiration.

PROFITS.

Aside from the pleasure and instruction one receives from keeping bees, the question of profits is the main one to consider; for if it does not *pay*, it surely can not be recommended as an occupation. On this subject of profits, enough testimony could be taken to fill a volume; but the following instances, taken from standard publications, will suffice. The *Indiana Farmer* of Dec. 16 gives the following report of John Owens, Needham Station, Ind.: "Last spring he bought one colony of Italians for $10.00. * * * * * From that colony he took 218 pounds of comb honey, and got six swarms, all in good condition for winter."

James Boggs, of Mason Co., Ill., reports in *Bee-Keeper's Guide* for Feb.: "I commenced in the spring of 1882 with 4 colonies; increased to 12, and took 518 pounds comb honey."

In March No. of *Gleanings*, 1883, Mrs. S. J. Axtell, Roseville, Ill., tells about getting 39,000 pounds of honey from 216 colonies.

In the *American Bee Journal* for March 7, Milo Smith, Greenwood, Iowa, states that he commenced the season with 25 colonies and received a profit of $37.00 per colony.

In *Gleanings* of Nov. 1st, 1885, R. P. Brooks, Forsyth, Ga., states that he commenced the season with 28 colonies, increased to 44, and secured 2200 pounds of honey.

In *Gleanings*, dated Jan. 1st, 1886, L. G. Purvis, Forest City, Mo., reports an increase from 29 to 51, and 3100 pounds of honey; and E. W. Pitzer, Hillsdale, Iowa, shows how his bees gave him a profit of $36.00 per colony.

The *Wellington (O.) Enterprise*, speaking of the Northern Ohio Bee-keepers' Association, which met Jan. 8th, 1886, says, "H. A. Knapp gave his experience with 55 hives of bees, which in one season brought him $370."

In *Gleanings* of Jan. 15, 1886, R. S. Giberson, East Newbern, Ill., reports an average of 158 pounds of honey per colony.

In the *American Bee Journal* of Jan. 20, 1886, S. L. Sherman, Oskaloosa, Iowa, reports an increase of from 19 colonies to 83, and a 700-pound crop of honey.

Hundreds of reports, equally good, might be given, and yet they come far from being the largest. I had quite a long talk with B. F. Carroll, of Dresden, Texas, who secured 681 pounds of extracted honey from one colony in one season, and this is fully equaled by persons in Colorado and California.

In looking on the other side, of course many failures will be noticed; but they are so often the direct cause of ignorance and carelessness that they do not argue with much force against progressive bee culture. The reports given are, however, enough to show what can be done with bees if the keeper does not depend on "luck," but handles them properly,

A WORD WITH BOX-HIVE BEE-KEEPERS.

Now, my friend, let us reason over a matter for a few minutes. You are keeping bees, or, rather, letting them stay on your place; but candidly, now, they do not give you much profit, do they? Your old round gums or square boxes are so unhandy that you can not manage them at all, but you rely almost entirely upon luck. Now, what kind of success would you expect to have in raising sheep, if you should turn a flock into the woods, and not see them nor do any thing with them for months? You might as well neglect sheep that way as to keep your bees the way you do in worthless old gums sitting under a tumble-down old shed, away off in some fence-corner, the weeds grown up around them—rotten moldy boards scattered about, serving as a hiding-place for moth and vermin. Now let me give you some of the objections that can be truthfully raised against such a method.

When you do want to go to your bees for something, they are very cross. They see a person near them so seldom that they are alarmed, and very vicious when you do approach them. I have seen so many colonies close to paths, and even sitting on porches where persons pass scores of times in a day, with no unpleasant results, that I know I state a fact, when I say your bees are much crosser than there is any need of.

If you take honey, you kill the bees or pry off the top of the box, and cut it out; the broken honey drips on your clothing, and you pile it in a pan, all mashed and broken, and the bees,—well, poor things, many of them killed, many drowned in the running honey; they go to work in the best way they can under the circumstances, and get the hive cleaned up; and if the queen is not killed in the operation, she may survive the butchery. The broken honey may attract robbers, or the moth may attack the weakened colony; and as you pass by your bees a week or two after, you exclaim, "I wonder what's the reason that swarm is so trifling;" when you ought to say, "Well, I see that colony of bees has dwindled out just as I expected, after having such a time robbing it."

If you drive out the bees, or kill them, and take all their comb, you then have the black comb, the bee-bread, and the brood, mixed with the honey, and the unsightly mess would compare with nice section honey about as well as the old log cabin of fifty years ago would compare with the fine brick mansion which stands in its place to-day.

If you do try to give your bees some attention, what can you do? No way of strengthening weak colonies, no way of supplying queens, no way of stopping swarming, no way of using over your old comb, no way of doing scores of things you should do when circumstances require; and yet you live in the latter part of the nineteenth century,—a century that will go down in history as the age of invention.

I hear you saying, "I don't take enough interest in my bees; I don't spend time enough with them; don't get enough profit from them to make it pay to put any more money in the business;" but I want to know how you could expect to have any interest in them, or profit

from them, when keeping them in such a way. There is as much improvement in bee-keeping as there is in general farming; but you content yourself with being years and years behind the times. You have the bees, so all you need to start right is to procure some good hives, and lift yourself from a careless, luck plan, to the higher method of intelligent and practical management. You say, "Oh, yes! you are working to sell a bill of hives." But, hold on; you know we started out to reason, so don't jump at conclusions. Of course, I or my agents would be glad to sell to you if you wanted to buy; but, don't destroy candid advice in such a summary manner; for if you reflect a moment you will remember that there are thousands of different kinds of hives in use, and only a fractional part of them are patented; and any hive you can get the combs out of is better than those you have. So just get some lumber and nails, and make some kind of an unpatented hive, and have part of the modern advantages at least. It is better to be a few years behind the times than half a century. I mean what I say. The delightful field of apiculture is open before you. Why not go in and glean not only of its pleasures, but also of its profits?

RELIABLE INFORMATION.

To succeed well in bee culture you should seek information on the habits and nature of bees; read some of the books and journals published on the subject, and then put into practice the valuable features you have learned. Diligent inquiry will pay as well in both pleasure and profit in bee culture as in any other avocation. If you are really interested in bees, do not content yourself with a small work like this, but read the bee-periodicals, and, above all, have a good standard work on the subject, to which you can refer when some peculiar action among the bees can not be explained, or when you wish to do some work with your busy pets, and are in doubt as to the best method of procedure.

The two best-known and most reliable periodicals devoted to the bee-industry are the *American Bee Journal*, published in Chicago, and *Gleanings in Bee Culture*, published at Medina, Ohio. Sample copies will be sent free upon application to the publishers.

In regard to books, I know of none I could recommend more highly than the "Bee-Keeper's Guide; or, Manual of the Apiary," published by Prof. A. J. Cook, Lansing, Mich. Mr. Cook is Professor of Entomology in the Michigan State Agricultural College; and in this book of 300 pages he has crowded more scientific information and practical instruction than can be found in any other work of the kind it has been my privilege to examine. It can be procured by mail by sending $1.25 to the publisher.

TRANSFERRING.

To transfer a colony of bees from a box hive to a new frame hive, smoke them thoroughly, and carry the hive some distance away under the shade of a tree, and set it on the ground, bottom up. Set an empty box, as near like the old hive as you have, where the old one was, to catch the returning bees. Now take an empty box and invert it over the open end of the hive containing the bees; and while cutting the nails with a cold-chisel, with the aid of some smoke blown in below the bees, and drumming on all sides of the hive with a small stick, they will gradually make their way into the empty box above. This is known as the drumming-out process.

When all, or nearly all, are driven out, set the box containing them on a sheet spread on the ground in the shade, being sure to lay a chip or stone under one side to give them air. Then pry off the side of the hive and carefully cut out the old comb and lay it on the table, using care and patience to get it out without breaking and mashing it against the old cross-sticks. Now cut the combs and fit them tightly into the frames; slip on some transferring-clasps, and hang the frame into the new hive. The transferring-clasps are made of ordinary number twelve wire, cut from 6 to 10 inches in length, and so bent in the form of a long staple that they will slip down over the top-bar, and thus hold the comb in place. When the pieces of comb in a frame are so small that the clasps will not hold them, use small sticks, three-sixteenths of an inch square, and one-half inch longer than the frame is deep. Fasten two of these on the opposite sides of the frame, wherever needed, by wrapping a piece of annealed wire around the projecting ends. Hang each frame in the new hive as soon as completed. If your combs are of such a size that they do not fill the frame, and you do not think it best to piece it out, leave the vacant place in the frame all at one end; and in hanging the frames in the hive, be sure to alternate the spaces; that is, break joints, so to speak; for if you do not, the bees are apt to build comb crosswise the frames through the vacant spaces. When all the good worker comb and brood has been placed in the new hive, close it up, leaving the entrance full width, and then set it on the sheet and drive the bees into it by shaking them, a few quarts at a time, in front of the hive, and brushing up to the entrance with a wing. The returning bees in the box on the old stand should also be driven into the new hive; then set it on the old stand, and the work is done.

When transferring from an old frame hive, the drumming-out process is not necessary if the combs are built with the frames. Invert an empty box on a sheet, leaving an entrance by means of a chip or stone, and take out each frame with the adhering bees, and shake the bees in front of the box. They will go in and remain quiet until you are ready for them again. In about four days the bees will have the combs fastened to the frames, when the transfer clasps and sticks should be removed.

Now let me assure you, there is nothing difficult about this opera-

tion if you go at it with determination, and at a time when there is enough honey in the flowers so that other bees will show no disposition to rob. I am aware that there are many persons who have bees, who say they would as soon think of trying to fly to the moon, as to undertake such a task. But, reason a moment. This is an operation that is performed thousands of times each season; and don't you think you sadly lack self-confidence if you are thus willing to acknowledge yourself beaten on something you have never tried? The necessity of having this done is great if your bees are in old square boxes or gums. I hardly understand how you can endure it, to keep them so. The combs are built irregular, and the space is not economized as it is in a hive that has the combs built in order; little bits and strips of combs are hanging down in the way, or fastened to the side, as well as drone-comb, in such quantities that it is a positive detriment to the colony. Many a time have I transferred from old hives that were so large the owner suggested I would have more comb than I could use; but I have found only enough available comb to fill six or seven frames, instead of too much for nine. Indeed, I can not be too emphatic in my advice to get your bees into good hives, and commence bee-keeping in earnest. You believe in other improvements; why should you stop before your bees are in proper condition?

BEE-VEIL.

Fig. 1.

While a protection for the face is frequently not necessary, it is always advisable to have a veil ready, as there are times when it will be an absolute necessity.

HOW TO MAKE A VEIL FOR EIGHT CENTS.

Take a yard of mosquito-bar, and in the center of it cut a slit the longest way that the crown of your straw hat will just go through. Put on your hat, letting the veil drape down over your shoulders; button your coat over it, as shown in Fig. 1, and you have a complete protection from stings about the face.

QUEEN.

THE QUEEN-BEE.

As the queen is the mother of the entire colony, and the strength of the colony therefore depends upon her, it is of the greatest importance that you should have a good prolific queen in each colony.

Upon opening a hive, if you wish to find the queen, look on the combs that contain brood; and because she is larger, and has shorter wings than the rest of the bees, you will not mistake her for one of the others, if you once get your eyes on her. In a large colony it is often a trying piece of work; but the oftener you do it, the easier it becomes. When first removing a comb, glance hurriedly over both sides, and you will often find her by noticing her quick movements.

HOW TO RAISE QUEENS.

If you rob a colony of bees of their queen at any time when there are eggs or young larvæ in the hive that would, if left undisturbed, hatch out workers, the bees will at once prepare to replace the loss by building some queen-cells around some eggs or larvæ, and by feeding these on royal jelly; this, with a large roomy cell that can not retard their growth, permits them to become fully developed females. While a worker requires 21 days for its growth from the egg, the queen requires but 16 days—3 days in the egg, 5 in the larva, 8 in the chrysalis. To get the best queens, they should be raised from larvæ just hatched; but in their haste to get another queen after the old one has been removed, they will often use larvæ three or four days old. To guard against this, keep from them all larvæ but that which is very young. They will be so anxious for a queen, that a dozen or more queen-cells are often built; and in one instance I had 47 of these cells built on three frames of brood by the queenless half after dividing a colony according to directions given on another page, except that I made the division before any queen-cells were started. After getting several nice queen-cells constructed you can then cut them out and fasten to different frames of brood, and hang each frame, well covered with bees, without a queen, into separate hives, and you thus have several small colonies, known as "nuclei." If you make but one, this is called a "nucleus," as that is the singular form of the word. Five or six days after your queen emerges from the cell she will fly out and meet a drone; and, being thus fertilized for life, she will commence laying eggs; and if the season is favorable this single frame of bees

and brood will work up to a good colony. It may be made to give you a good profit, however, if you will help build up by giving empty comb or comb foundation, and an occasional frame of brood. I have received good returns from colonies thus built up; and in doing this I also practice

CROWDING THE QUEEN,

which may as well be explained right here as in any other place.

The queen works from the center out, in the form of a globe, thus having a large circle in the comb, in the center of the cluster of bees, filled with brood; a smaller circle on the adjacent combs, and so on. Now, if you change the position of these combs, or put an empty one in the middle, the queen will not tolerate empty cells where the bees must cluster anyhow to keep the adjacent brood warm, so she fills them with eggs also, and you have thus crowded her to greater activity, and your colony will therefore increase so much the faster. In connection with this you should read what is said on another page about weak colonies. There may seem to be a contradiction between a part of this article and that; but, rightly understood, there is none. A weak colony there referred to is a poor one with a laying queen from which you should be getting a better profit; while a nucleus is a few bees that you have set to raising a queen, to save the loss you would sustain by having a strong colony do it.

INTRODUCING A QUEEN.

If you wish to change a swarm of black bees to Italians, or wish to replace an old and unprofitable queen with a young one, hunt out the old queen and kill her, and put the new queen in the hive in a small cage, made by bending a small piece of wire screen around your finger and pinching the ends shut, or stopping them with corks.

At the end of two days open your hive again and let the queen loose among the bees. It is also a good plan to put a few drops of honey on the queen as she comes out of the cage. The bees will lick up the honey, and accept her even when they might otherwise have refused to own her and made it necessary for you to cage her again for a day or two. When putting in the cage, crowd it between the combs where the queen can reach honey through the cage if the bees should fail to feed her. If you have a queen sent to you by mail, the cage in which you receive her will have in it several days' provision. Now, if you introduce an Italian queen in a black colony, in 21 days from the time you killed the black queen the last black bee will have hatched; and in 21 days from the time you let the new one loose, the first Italian bee will be hatched, and in 45 days from this time the entire colony will be Italian, if you made the change early in the season. This proves conclusively two points, often contradicted by the old-fogy bee-keeper; that the queen lays all the eggs, and that the average life of the workers in the busy part of the season is but 45 days.

After you have paid out your money for a queen it is very natural that you should want to guard against her leaving for the woods some

fine day with a large swarm of bees; for good queens are just as apt to abscond as any. You can prevent this by

CLIPPING THE QUEEN'S WING.

To do this, catch your queen; and you need not be afraid, either, for she will not sting; then with a pair of scissors, cut off half of one of her wings. This will require careful handling, in order that you do not pinch or injure her; but, once done you can rest assured that, whatever swarming mania your bees may take, here is one queen, anyhow, that will not accompany the absconding swarm.

When a swarm issues from a hive that contains a clipped queen, she will make an attempt, ineffectual, of course, to fly, and will drop on the grass within a few feet of the entrance; and if you do not find her until some time has elapsed, several workers will be clustered around her. The swarm, meanwhile, after flying about as usual, and frequently not until the bees have nearly all settled or clustered in the accustomed manner, discovers that it is without a queen, and, of course, will return to the hive. They know that it is useless to go to the woods and try to establish a new family when they have no queen to supply eggs; and yet the old-fogy box-hive bee-keeper often swells in his pride, and, pointing to his thirty or forty years' experience with bees, tells you how he knows that the drones lay the eggs, or advances some other equally absurd theories.

The title of this pamphlet, FIRST PRINCIPLES IN BEE CULTURE, will show that my intention is merely to teach the most prominent facts in progressive apiculture, correct absurdities, and thus give you an intelligent start that will be worth many times its cost, while many of you will not rest satisfied until you have procured such information as has come from the pen of Langstroth, King, L. C. Root, A. I. Root, or the peerless Cook. But, excuse such a digression from the subject.

If two or more swarms issue at once, the queenless swarm will join another, unless they, too, had a queeen with a clipped wing. If two swarms do thus unite, and you have hived them together, and do not know which hive the one with the clipped queen came from, look carefully in front of all the hives, and you will doubtless find her clinging to a blade of grass, with a few workers clustered around her. Now, if your hives are close together, and you are still unable to tell from which she came, put her and the bees under a tumbler until about dusk, then release a bee or two at a time, and watch carefully to see which hive they return to, and that will be the hive the queen came from—the one to which she should be returned.

If you do not wish to have them swarm again, open the hive and cut out all the queen-cells. If you were disappointed in not securing the two swarms separately, take a frame of brood from another hive and put into a new hive with your queen, and then go to the double swarm you hived, and take out about half of your bees and put in with her. You must be careful not to get the other queen with them, however. If you hived them on brood, or empty combs or comb

foundation, you can get along very well; but if they were put into an empty hive, lift out the frames and shake off the adhering bees and let them travel into the new hive in the same manner as described in the instructions for separating swarms that have each a queen.

Here is an important word of caution: If you do clip a queen's wing, be very sure it is after she has met a drone; that is, has been fertilized, for this is always done on the wing; and if she can not fly it never will be done; but as this takes place within ten days from the time she hatches, there is do danger of your making this mistake, if you remember the caution. A queen will lay, even if she has never met a drone; but as the eggs invariably hatch out drones, you might better have killed her, and thus prevented her from standing in the way of another being raised, than to have clipped the wing of a virgin queen.

WHERE TO BUY QUEENS.

There are many Italian-queen raisers in the U. S., but I know of none whom I could recommend more highly than Geo. W. Baker, of Milton, Wayne Co., Indiana. His bees are not only bright looking and gentle, but are hardy, and good workers. He will send his circulars free to any address upon application.

SWARMING.

This is the following of nature's law of increase. In the spring of the year, after the flow of honey has commenced, and the bees have increased in numbers, and drones are beginning to hatch, the rule is that each strong colony will cast at least one swarm. It is as difficult to give positive rules about swarming as for any other one point in apiculture; for when a colony gets the swarming mania it seems as though it is carried on without the first particle of law, order, or reason. Here are a few points that may, however, be relied on:

The old queen always goes with the swarm; and in case of second and third swarms, there are frequently several queens; but at least one unhatched queen is left in the hive.

If the queen for any reason fails to accompany the swarm, or if her wings are disabled, or have been clipped, the swarm will return to the hive. When a swarm issues, if you wish to make sure of their staying after hiving them, first put a frame of brood, some of which should be in the larval state—that is, uncapped—into the hive. This gives them a start in housekeeping, so to speak, which they appreciate; and as they will not go off and leave the brood to chill and starve, you are sure of your bees.

Italian bees will sometimes swarm without having first built queen-cells.

Late swarms that have not succeeded in making a living will sometimes swarm out and try to enter another hive. They meet, however, every thing but a cordial reception.

Before a swarm issues, the bees fill themselves with honey, so they will be sure of provisions for a day or two at least, and that they may be thus able to commence comb-building at once. Now, when bees

are full of honey they are good natured, and there is thus very little danger of being stung; but when they get the swarming fever, and rush out in a frantic way, they are then quite apt to go with empty stomachs, and will consequently at times be uncomfortably vicious.

Depredations of mice and moth will also cause swarming-out at any time of the year that they can fly.

HOW TO HIVE A SWARM.

When a swarm issues, set the hive you wish to hive them in on a sheet spread on the ground, with the entrance open full width. Now shake the bees into a dish-pan, and before they have time to think of rising into the air again, pour them in front of the hive and brush them gently toward the entrance with a wing, or small green twig. If you do not get them all at first, repeat the operation. Do not cut off the limb on which they alight, unless it is easily spared and easily cut. If they alight on the body of the tree, or on a fence, as they are apt to do if there is much wind blowing at the time, brush them into the pan.

After they are all in, move the hive without delay to the place you intend it to occupy; and if it is not in the shade, cover it with boards or bushes. Many leave the hive until night before moving it. The plan is bad, as is evidenced by the bewildered bees to be found around the place after they commence to fly next morning. Here is another reason for moving the bees away from near where they settled; and although I never saw the idea in print, and can quote no prominent bee-men on the subject, it looks so reasonable that I give the idea, and you can take it for what it is worth. After a swarm settles, the bees send out scouts to hunt a home; and if the swarm is hived in their absence, and left where they can find it, they will often succeed in inducing them to leave the hive and go with them to the woods.

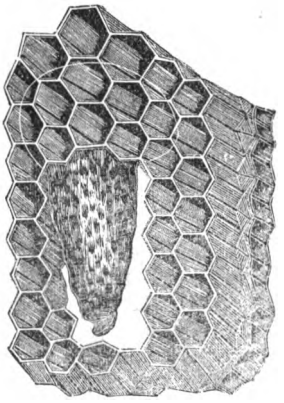
When two swarms cluster together, set two hives facing each other on opposite edges of a sheet, and shake the bees between them; then with a brush, force them to travel toward each hive in about equal proportions. Let them travel at least two feet, and they will thus spread out so evenly and thinly that you can see the queens. Watch closely; and when you can, get some one to help you, and be sure the second queen you see does not enter the same hive the first one did.

Allowing bees to swarm naturally is attended with many uncertainties that judicious dividing will eliminate. It is hardly possible to always prevent swarming, at pleasure.

The following methods are used with reasonable success: Cut out the queen-cells. Keep the hives well shaded. Give them an abundance of room in the surplus-boxes.

A free use of the honey-extractor, if you have one, will help as much as any thing to keep down the swarming fever. Second swarms may be prevented by cutting out all but one queen-cell. You can retard swarming by taking brood from your strongest, and giving it to weak ones.

Fig. 3.



QUEEN-CELL.

DIVIDING.

Dividing is taking one swarm of bees and making two or more out of it, or making one new swarm from two or more old ones. If rightly understood this is a much safer way to increase than to allow natural swarms to be thrown off; but injudicious dividing has caused great loss, as many can testify. In all your manipulations with bees, always remember to *keep your colonies strong.* It is the disregard of this most important principle that has caused loss from dividing. Professor Cook says, "I have practiced dividing ever since I have kept bees, and never without the best results." There are several ways of dividing a colony, and it is always advisable to furnish the new swarm with a laying queen, if possible; but a plan I have successfully used, and one that can surely be recommended to beginners for its simplicity, is as follows: If you see that your bees are very strong, and the general indications point toward their swarming, go to the hive in the middle of some pleasant day when they are working well, and look over the combs until you find a queen-cell (Fig. 3) that contains a growing queen. Set the frame containing this into a new hive with three other frames of sealed brood, first brushing off all the bees so as to be sure not to remove the old queen. Now put empty frames, or frames filled with foundation, into the old hive; close it up and carry it off thirty or forty feet, and set it down in a new location, leaving the new hive with the four frames of brood where the old one was, and your work is done. The bees out gathering honey will, of course, return to the same place they started from, and quite a number of the bees carried away with the old hive will return to the old place; and as a rule the colony will be about equally divided. The returning bees, of course, have no queen; but in from eight to sixteen days after dividing, the queen in the cell will have hatched, been fertilized, and commenced laying. By furnishing them a laying queen, you thus see

that many days will be saved, during which time the eggs laid, when hatched, will nearly equal a swarm. When a colony is very strong they can be divided before they have started queen-cells; but this should not be practiced by beginners.

If you do divide before any queen-cells are built, eight or nine days after dividing, the half that was queenless will sometimes swarm, as two queens may hatch out at the same time, or the bees may get the swarming fever, and off they go as soon as a queen hatches. To prevent this, remove all but one queen-cell about seven days after dividing.

When furnishing a divided colony with a queen-cell from some other hive, they will sometimes show a preference for those of their own raising, and destroy the other. If they do this, destroy all of theirs and give them another. Whenever possible, however, give them a laying queen; and if honey is coming in rapidly there will be little danger of her being killed, if you turn her loose at the end of twenty-four hours.

WEAK COLONIES.

These should never be tolerated in the apiary whenever it is possible to prevent it. If colonies come through the winter in a weak condition, it is better to rob the strong ones of part of their brood as soon as they can spare it, and give it to the weak ones. It will not harm the strong ones as much as it will help the weak ones. Giving brood this way is what is known as "building up."

This disposition to care for weak colonies, instead of leaving them to be destroyed by robbers or moth, or letting them work up by mere chance, is one of the marks of a successful bee-keeper.

In building up, care must be taken that you do not do it too rapidly. If you give the weak colony more brood than the bees can cover, or if it gets so cold at night that they have to cluster closer than you had expected, the brood will chill, and you will thus lose the hatching bees and your time also. This same danger of having brood chilled must be guarded against when putting empty comb in the center of the cluster, when crowding the queen.

Late swarms can often be made into good colonies by this kind of help, when, if left to themselves, they would dwindle out before the first snow.

UNITING.

When the honey-flow has ceased, and, as a consequence, brood-rearing has also, the weak colonies remaining should be united — two or three being put together as their strength may require. This is done by smoking the colonies with tobacco smoke, or sprinkling them with sweetened water scented with peppermint, to give the bees the same scent. Put them together with the best combs into one hive with one queen; but to be on the safe side it is best to keep the queen caged for one day.

FEEDING BEES.

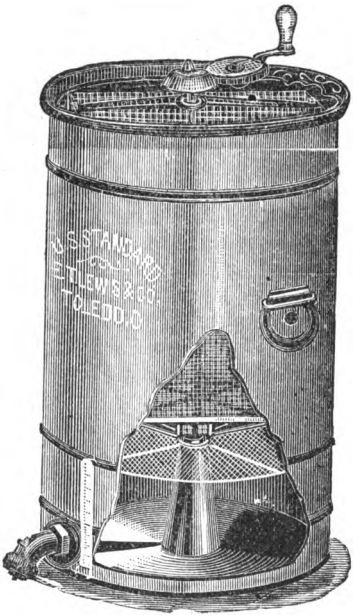
Although it is said of bees, that they will "board themselves," there are times when it pays well to give them a little attention in the way of feeding. By no means would I have you infer that it is advisable to feed your bees some kind of syrup and sell it as honey, for that is pure deception—or, plainer speaking, dishonesty; for you will remember that bees *gather* honey, not *make* it; and if you feed bees in such a way that they store the syrup in the surplus-apartment, although it is in honey-combs it is, nevertheless, syrup. But there are two principal reasons why bees should be fed: First, to supply light stocks with sufficient stores for winter; second, to stimulate brood-rearing.

If feeding for winter stores, never think of using molasses or cheap sugars. Granulated sugar is the best. This should be made into a moderately thick syrup by pouring on hot water, stirring well while pouring. The proportion should be about two pounds of sugar to one pound of water.

October is a good month for fall feeding in this climate; and when you commence, feed rapidly. You may want to give a colony fifteen or twenty pounds; but whatever the amount, feed it as rapidly as the bees can store it, and in as short a time as possible. Do not allow this work to lag on your hands for weeks, but finish it right up, so you will not be afraid of their running short in the winter. Bees should be kept very quiet in the winter; but feeding excites them then, and causes them to eat more, which is the very opposite of what should be.

Many kinds of feeders have been made and sold; but if you want to save expense, here is a good way to feed, and do it rapidly too. Take as large a pan as will go in the hive over the brood-frames. Pour in your syrup; lay a chip or piece of bee-comb in the middle of the liquid for a float; and over this lay a piece of thin muslin, large enough to drape down the outside of the pan. Set this on the frames and cover up the hive, and the colony you wish to feed will be the only one to get it, if you take the necessary precaution against robbers.

A proper amount of feed in the spring can hardly be too highly recommended. Honey coming into the hive stimulates the queen to lay eggs, and the only exception to this rule will be found in the late fall feeding. Feeding early in the spring helps greatly in building up your colonies, and gets them strong, and thus ready to make the most of the honey-flow when it does come. A tumblerful of feed, placed at the entrance in the evening, when the weather is warm enough, and continued until natural stores are secured, will have the desired effect. Cut some small grooves in a block; hold the block tightly over a tumbler of the feed, and suddenly invert it. This serves as an atmospheric feeder, as the bees will keep drawing it out at the bottom until it is exhausted. In all of your work of this kind, do look out for the robbers.



HONEY-EXTRACTOR.

EXTRACTED HONEY.

In order to secrete a small amount of wax with which to build comb, bees must eat a large amount of honey. Now, if you throw the honey out of the combs and return them to the hive, you will get many more pounds of honey to the hive than where they have to build comb for all the honey they store. The large amount of honey procured is the incentive for doing the extra work required to procure honey in this form; but if a person lives where the market is overstocked with it, the production of *comb* honey is then more profitable. Honey-producing, like every thing else, has its differences in methods that should be considered, and then the one adopted that best suits the individual's surroundings.

Another advantage in using the extractor is in thus being able to give a queen plenty of room for egg-laying; as, when honey is coming in very rapidly, the workers often store so much in the brood-chamber that the queen does not have as much space as necessary to keep the colony bred up to its full strength.

The above cut will give you a good idea of an extractor.

The combs, after being uncapped, are hung in the revolving comb-basket, and centrifugal force throws the honey against the sides of the can, and it then collects in the bottom. There are several different kinds of extractors on the market; but I think the United States Standard, manufactured by E. T. Lewis & Co., of Toledo, O., is better adapted to the wants of the average bee-keeper, than any other

made. It has several conveniences claimed by none other; and as they are covered by patents, you could not get them in any other make. The price ranges from eight to fourteen dollars. Descriptive circular and price list can be had by addressing the manufacturers.

WINTERING.

Wintering bees is the one great drawback to bee-keeping; for by the losses thus met with, many are driven from the occupation. Whatever else you may or may not do in preparing for winter, be sure each colony has from 25 to 30 pounds of sealed honey, and have only as many combs in the hive as the bees can cover well without being crowded. Lay a few corn-cobs crosswise over the frames, to afford a passage over the combs; then cover with a piece of burlap (coffee-sacking); and if any of the frames have been removed, have it long enough to drape down the sides also. If you are going to winter them in the cellar, lay a few more thicknesses of cloth—woolen is the best—over them, and have the cover off when you put them in. If they are to be wintered on summer stands, arrange them the same way, except fill the top with some dry material that will absorb moisture—folded cloths, chaff cushion, sawdust, cut straw, etc. A plan I have successfully used, is to cover the frames with burlap, as before stated, and then set it on a bottomless box made of ½-inch stuff, five inches deep, that fits loosely inside of cover, and fill this with corn-cob chaff, a dry substance blown out from among shelled corn, that can be had for the asking at almost any grist-mill. I prefer this to chaff cushions or folded cloths, because it settles down better at the sides and corners. Chaff or sawdust packing, three or four inches thick on all sides of the hive, is to be strongly recommended. This is done by putting a rough box around the hive, leaving the entrance open, filling the space between and covering so tightly that no rain can get in. But merely placing loose material in the top is infinitely better than no protection, as it absorbs the moisture thrown off by the bees. If no moisture ever collected in the hives, we are safe in saying that losses by wintering would not occur one-tenth as often as they do. During continued cold, the moisture frequently causes the bees to starve with plenty of honey in the hive, because it collects in thick frost on the combs, which they can not dig through; so after the honey near the cluster is consumed, they starve. Or if a warm day comes before they starve, the melted frost generates a damp, sickish air that frequently causes dysentery, which too often means death to the entire swarm. Wire gauze should be so tacked over the entrance as to keep out mice, but allow the bees to pass. This will give them plenty of fresh air, which is one of the essentials to good wintering.

Where it is considered too much trouble or too expensive to pack each hive separately, preparations may be modified by setting the hives in a row on a platform about six inches high, and placing boards at the rear and in front of the hives, leaving a space about a foot wide between the hive and the sides, and then filling this with sawdust, chaff, or forest-leaves; then cover it all with a tight slanting roof. A

passageway should be made for the bees from the entrance of the hive to the outside of the clamp.

Of late years it seems to be nearly as difficult to get bees through the spring as through the winter. Often, after commencing to fly, they will grow weaker and weaker, some of them dwindling out altogether. This is called "Spring Dwindling." In March, 1884, I took from the cellar a very fine colony of Italians that were strong in numbers, bright and active, and had even raised a few drones. I was then absent six weeks on a trip to Southern Kentucky; and imagine my surprise upon returning, to find this colony of bees dwindled down to a very ordinary one; and although I gave it good care it failed to give any profit that season. No satisfactory explanation can be given for such cases; but stimulative feeding early in the spring is to be strongly recommended as a preventive. Also watch your bees closely; and if there is any sign of this dwindling, contract the brood-chamber with quilts or division-boards, and keep all the heat from escaping you can.

I presume more has been written on wintering than on any other topic in apiculture, and, of course, thousands of suggestions have been made; but, no matter what your method has been, or whether you ever heard of any one else trying it or not, if you have been successful, if you have saved your bees when all around you lost heavily, why, don't bother with some one else's plan, but take your own way for it, as the point is to winter successfully; and if you know how, that is all that is necessary.

ROBBING.

Exposed sweets, any place about the apiary, will remain unnoticed while plenty of honey can be gathered from flowers; but let the honey-flow cease, and there will be an uproar immediately; for after all is exhausted from this source, more than one weak colony may be compelled to sacrifice their winter's food to the pilfering intruders; so at such times, prevention is better than cure. If, however, it has commenced, the entrance should be made very small, and the rear end of hive propped up so that the bottom-board will slant toward the entrance, thus enabling the bees within to stand up-hill and fight down, which gives them a decided advantage over the robbers. A handful of long grass thrown over the entrance to the besieged colony gives them a great advantage, as the robbers are afraid of getting entangled in it. A window-glass leaned over the entrance, allowing the bees to find their way around the end of it, is also said to greatly confuse the robbers.

Now, do be careful about handling bees at a time when the bees show a disposition to rob. When possible, do the work at a time of day when the bees are not flying freely.

FERTILE WORKERS.

A fertile worker is certainly a pest; but, fortunately, it is not of very frequent occurrence. If a queen does not die until seven days after she stopped laying, the colony will then be hopelessly queenless; or if a young queen is lost while out on her wedding-flight, or gets into the wrong hive on her return, the colony is then in an unfortunate condition, because it has no eggs nor young larvæ from which to replace the loss; and in such a case, the strong desire for an increase of the colony will cause one of the workers to commence laying eggs, but which will invariably hatch out drones. They will deposit several eggs in a cell; and when the brood is capped over, the cappings are raised to an unnatural height, to give the growing drones more room. To get rid of a fertile worker, give the colony a caged queen, which should be liberated at the end of two days. Also give a frame of brood and bees where possible. A frame of brood containing a queen-cell and the adhering bees will do, if the queen can not be furnished. Shaking all the bees on the ground a few rods from the hive, and then replacing the hive, with a new frame of brood added, will often lose the fertile worker, and a queen will be raised from the young larvæ in the new brood-comb.

BEE-MOTH.

The following, from the A B C of Bee Culture, is right to the point:

"It is very likely that the moth-worm is, as has been so often stated, the worst enemy the honey-bee has—if we except ignorant bee-keepers; but if such is the case, we can consider ourselves very fortunate; for the moth is almost no enemy at all to one who is well posted and up with the times. When you hear a person complaining that the moth-worm killed his bees, you can set him down at once as knowing very little about bees; and if a hive is offered you that has an attachment to catch or kill moths, you can set the vender down as a vagabond and swindler. You can scarcely plead ignorance for *him;* for a man who will take upon him the responsibility of introducing hives, without knowing something of our modern bee books and journals should receive treatment sufficiently rough to send him home, or into some business he understands."

If you find immature bees dragged out in front of the hive, you may feel satisfied the colony is annoyed by moth-worms. The bees cut away portions of the comb, and waste the brood in order to get out the moths. Keep your colonies strong, and you will need have no fear of these enemies; or, better yet, keep Italian bees, or a good strain of hybrids. If you have a colony of black bees that are being annoyed by moths, hang in a frame of Italian bees and brood, and you will soon find that the moths have been destroyed. It is well, however, to take the same precaution you do when uniting two colonies. If the moths have made serious progress before you have discovered their presence, cut out the webbed and ruined portions of the comb, kill every one you can find, and thoroughly clean the bottom-board, and you may thus be able to save them without help

from other swarms. Tip the hive a little toward the entrance, so the bees can more easily drag out the bits of comb and moth dirt. If the rear of the hive is lower than the entrance, you will almost invariably find a lot of [illegible] dust, etc., that makes a regular moth-nest. I have often found bees in this condition, and yet their owners wondered why their bees did not do better. It is important that you should remember to have your hives so constructed that there are no crevices, or lurking-places, in them where the bees can not get, and the moth-miller can. If there are any such places, you will be annoyed some with the moth, no matter what kind of bees you have. There should be three-eighths of an inch between the frames and the body of the hive. When the board on which a bottomless hive sits warps a little, as it is very apt to do, moths are almost invariably found hatching under the edge.

To keep empty combs, that are stored away for future use, free from the depredations of moths, fumigate them with brimstone.

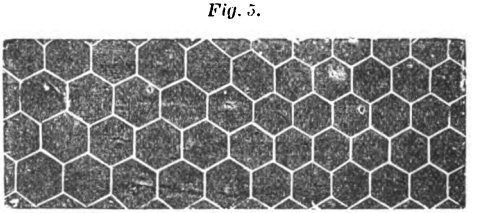
FOUL BROOD.

This is the most malignant disease that can come into an apiary. It is as much to be dreaded in the apiary, as smallpox is to be dreaded in the human family. One cell of brood infected with this disease will, in time, ruin the colony; and if any of the honey in such a colony should be carried out by robbers, this honey, when fed to larvæ, will cause the same disease to appear there. You can thus see what a great amount of care is necessary when handling any infected stocks.

Any brood thus diseased looks as though it had rotted. It settles to the back and bottom of the cell, and becomes a grayish, putrid mass. The best way to deal with it is to drive the bees into a clean, empty hive, and burn the old hive and combs.

If especially interested in the subject, you will do well to correspond with Chas. F. Muth, Cincinnati, Ohio, who has given the matter much attention.

Fig. 5.



DRONE-COMB. WORKER-COMB.

DRONE AND WORKER COMB.

The above cut illustrates the difference in size between drone-cells and worker-cells, the former having sixteen cells to the square inch, and the latter containing twenty-five, counting one side, and twice this, of course, if counting both sides of the comb.

There is no necessity for having so many drones as the bees raise.

A piece of drone-comb three inches square, in the center of the hive, will cost you in one season 1800 worker-bees. Try as hard as you will to keep the bees from raising so many drones, you will then have plenty about your apiary. In transferring, always leave out the drone-comb, except a small piece which should be put in a frame that is hung to one side. Do not put it in the center. A free use of comb foundation will, more than any thing else, keep the bees from building drone-comb. D. A. Jones says: "I have no doubt that many men lose a large part of their surplus honey by raising so many drones." They are inveterate eaters; but not only this, the strength of the colony is used in raising drones, that should be used in raising workers.

After swarming season is over, the drones are disposed of, because it is more ecomomical to raise more the next season, than to winter them over. Many think the workers sting the drones; but I have never been convinced that they do. I inquired of Professor Cook regarding this point, and he replied, with his usual candor, "I have never been satisfied that they do."

OLD COMB.

A great mistake is often made by wasting old comb, which, if rightly used, would more than double the profit from your bees. No matter if the bees have died in it; no matter if it is moldy; the bees can clean it a great deal easier than they can build new. You say that it is black and thick. The thickness is in its favor, so far as wintering goes; and I acknowledge the fact, that the accumulation of cocoons in the bottom of the cells has a tendency to make the cells smaller, and thus reduce the size of the bees when hatching; but I wish to remind you that, while there is truth in all this, the theory reduces the bees in size much faster than the facts will justify. This was never so forcibly illustrated to me as when, in Barren County, Kentucky, I transferred a colony of bees that had been in the old hive for eighteen years. The comb was the darkest and heaviest I ever saw, but the bees were apparently as good as any in the community. So, don't give yourself unnecessary worry about thick black comb; and as for moldy comb, or that containing dead bees, it is a small matter for the bees to clean it, especially if you give it to them one frame at a time. I like best to put it in the center of the hive late in the afternoon; and if your colony is strong, and the comb was not too bad, it will be about ready for eggs and bee-bread the next morning.

Furnishing new swarms with old comb is like presenting a newly married couple with a well-furnished house that needs cleaning up. There is, however, no certainty about a new swarm staying in a hive full of old comb unless there is a frame of brood there also. The best and surest way of using old comb is to use it in crowding the queen, and when dividing. As a rule, make drone-comb into beeswax, as it is only occasionally that you will have use for it. Nice straight worker-combs is what the practical bee-keeper works for.

A. C. Balch, of Kalamazoo, Michigan, lost all the bees he had (96

colonies) in the winter of 1880–'81; but by using his old comb he increased 6 colonies, that he bought the following spring, to 56 in one season, and so wintered them that he had 54 with which to begin the season of 1882.

In *Gleanings* for December, 1885, Wm. Malone, of Oakley, Iowa, says: "I lost 33 colonies out of 38. Of the remaining 5, 3 would have made one good colony, and no more. Since May 18th I increased to 31 good colonies, and have taken 945 pounds of extracted honey. I had all the empty combs I could use."

COMB FOUNDATION.

This is a thin sheet of beeswax, with impressions on each side of it, identical in shape with the bottom of cells made by the bees. The sheets of wax are secured by dipping a wet smooth board into a boiler of melted beeswax, and removing the thin coating of wax that adheres to the surface of the board. These are then put into a press, or passed between rollers that stamp the bottom and start the sides of the cells. This is as long a step as has ever been made toward manufacturing comb or comb honey, although the public have been imposed upon with newspaper articles that pretended to tell about comb honey that was never seen by a bee. All such stories are false. I would as quickly suspect that the eggs on the market were produced without poultry, as that any comb honey was made without bees. A reward of $1500 is offered for comb honey manufactured without bees.

Comb foundation is one of the most important inventions pertaining to bee culture; for not only can larger yields of honey be produced by using it, but it also causes combs to be built straight and regular, and is of great value in preventing the building of drone-comb. James Heddon says it is worth a dollar a pound to the bee-keeper. I would say that, when used for starters in securing straight combs in sections, it is worth much more than that. It is sold for different prices, according to thickness. It is obvious, that the thick, heavy quality for the brood-chamber does not require as much labor to the pound as the very thin and light that is used in the surplus-department. The heavy will run about five square feet to the pound; and the very light, nine and ten feet to the pound. Prices range from 45 to 65 cents per pound.

HOW TO FASTEN TO FRAMES AND SECTIONS.

On this question, the same as any other, there is a diversity of opinion. Although I have seen and used different machines for fastening starters, I have discarded all, and now think the best plan is to dip the edge of the foundation into melted beeswax and rosin, and then stick it to the top-bar of the section. We use two parts of beeswax and one part rosin, and melt it in a small pan over a lamp. Do not keep it too hot, but turn down the lamp so it keeps it just melted.

In putting full sheets of foundation in a brood-frame, first fasten the foundation by mashing the edge of it down on the comb-guide with a screw-driver; and then with a brush about the size of a lead-pencil, or a small swab made by wrapping cloth to a small stick, dip

the solution on the foundation and brush it along against the top-bar of the frame, thus thoroughly cementing the foundation to the frame. Another way is to tack it fast to the top-bar by first letting the tacks pass through a very thin strip of wood. Always have the foundation hang in the center of the frame or section.

IMPORTANT POINTS BRIEFLY STATED.

A good colony contains from 20,000 to 40,000 bees.

Ammonia is the best antidote for the poison of a bee-sting.

Never keep honey in a cellar. A dry room is the place for it.

Always see that your frames are properly spaced before hiving a swarm. They should be 1½ inches from center to center.

In shipping or hauling bees when the weather is warm, they must be given plenty of fresh air by means of wire screens.

In hot weather, let your hives be shaded in the warmest part of the day. The shade of a tree is preferable to a bee-shed.

Adopt one kind of a hive, and have all frames the same size, and you will then be able to get the full benefit of the movable combs.

In all your manipulations with bees, remember that you can handle them much easier, and control them with more certainty, when there is an abundance of honey to be found in the flowers.

Do not be afraid to handle your bees. You buy good hives, so that you may be able to, then don't neglect to do it. A good smoker is a great help, and will take away much of the fear.

Make it a point to have nice straight combs. When handling them, shave off any bulged places, so that they will have an even surface, and you will meet with no difficulty when changing them from one hive to another.

Comb honey should be taken from the hive as soon as it is completed. It is then as white and clean as it can be, and should not be left in the hive for the bees to breathe on and daub with propolis.

Do not permit a new swarm to commence work in the sections until they are well started in the brood-chamber. A piece of burlap (coffee-sacking) makes a good quilt to keep them below, and also to lay on top of the sections when allowing the bees to have access to the surplus-department.

While it is doubtful whether bees can gather honey at a profitable rate further than three miles from the hive, it has been clearly proved that they will fly five and even seven miles from the hives. In April *Gleanings*, 1882, Mr. H. A. March, Fidalgo, Wash. Ter., gives positive proof of the fact that bees do fly such distances.

A strong colony of bees, kept sitting on a pair of scales, will frequently show an increase in weight of from six to ten pounds in a day during a good honey-flow. In *Gleanings* for Oct., 1884, Frank McNay, Mauston, Wis., gives the daily weight of a very strong colony for the season, and five days show an increase of from fifteen to twenty pounds each day. That colony did not swarm, and gave 334 pounds of extracted honey; but even this is overreached by a report in *Gleanings* for Jan.

15, 1886, where it states that a Vermont man kept on scales a swarm which showed an increase of 91 pounds in three days.

The winter of 1880-'81 was the most disastrous one for bees ever experienced in the Northwest. In the following July number of the *American Bee Journal*, the editor gives some valuable statistics which are based upon 521,230 colonies that were reported to him. About two-fifths of them (211,732) were kept in box hives; and out of every 100 so kept, 11 were alive in the spring. Of the remaining 309,498 kept in frame hives, there were 54 alive out of each hundred. Further comment is unnecessary; for those who believe the old way is best will continue to think so in spite of facts. But I might add, that the mere fact of combs being built in frames does not in itself make the difference; but those persons having good hives give their bees more intelligent and profitable management.

When honey is not coming into the hives, bees are very cross, and smoke must be freely used in handling them. People often express surprise at seeing one take up bees with bare hands. There is nothing especially brave about this if the bees are full of honey, and it is at a time when a heavy flow of honey has made the bees naturally peaceable. In the courtyard at Decatur, Ind., in June, 1885, I gave a lecture on bee-keeping, and a public illustration of how they could be handled; and although there was an audience of at least 150 persons, not one of them was stung. Many of them were surprised at the docility of the bees; but as I there told them, it could be attributed to the heavy flow of white-clover honey which was then at its best.

"P

THE OLD WAY

Mr. Jones is having an awful time. He don't use the 'Hubbard' hive, does he?

COMPARED WITH THE NEW.

DESCRIPTION AND PRICE LIST

OF THE

HUBBARD BEE-HIVE

(PATENTED JAN. 16, 1883.)

G. K. HUBBARD,

INVENTOR AND PATENTEE,

LA GRANGE, - - - INDIANA.

UNRIVALED FOR CONVENIENCE.

SOLD ON STRONG WARRANTS.

IT PAYS TO USE IT OR TO SELL IT.

INTRODUCTION.

Friends:—In the preceding pages great care has been taken to exclude all that would appear to advertise my special hive, and to give facts in general that will benefit any bee-keeper; for I do not want sound advice to be set aside, with the impression that it is all colored up to suit and thus advertise one certain appliance for the apiary. Because I have stated that improved hives are the kind to use, don't think that the advice is canceled because I have one to sell, for there are hundreds of different kinds of hives in use that are far superior to the old box or hollow log, and I now frankly say that you ought to adopt one of them.

Whether the one you adopt shall be the Hubbard hive or not, should depend upon the opinion you form of its convenience; and now because the following pages are used in advertising this special kind of hive, remember that this should be no reason why the facts already given should be viewed with suspicion.

There are a few hive-dealers in the United States who rely mainly upon the ignorance of their customers, and get their money by pretending to sell them some "secret," or pretended "new system" of bee culture. I have no patience with such schemes, but believe it is much better to build upon the intelligence of my customers—try to educate them in this fascinating industry, rather than to get their hard-earned dollars, and then leave them just where they were before. My constantly growing business is evidence of the practicability of such a course; and all who value honesty will have no reason to criticise it.

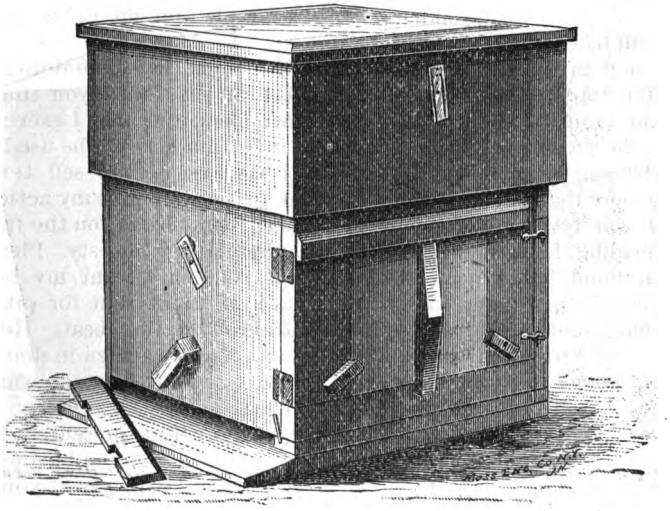
I don't know whether my hive would suit you or not, for there is no invention that has the unqualified approval of all; but the reason why it pleases me as well as many others will be brought out in the following description, so that you may have a good idea of what you are purchasing before you invest.

To many of you who realize its advantages, it might not be profitable for you to invest to the extent of making a complete change, if so doing would necessitate the waste of a large amount of capital invested in other movable-frame hives in which your bees have been profitably managed. If you are striving for improvements; if you are not fully satisfied with the hives you have; or if your bees have not been yielding the profit they ought, you are kindly asked to weigh the arguments presented; and if you then think that the Hubbard hive

would make your bee-keeping more pleasurable and profitable, your order will be thankfully received.

Although my invention is protected by a patent, and I am doing to a certain extent a patent-right business, I can yet assure you that I have no sympathy with patent-right swindlers, and that I exercise care in the procuring of agents, that my invention may not be used as a bait by confidence men and sharpers. I have refused to sell territory to more than one man, and have no reason to regret my action. Should you favor me with your patronage, I can pledge you the fairest of dealing, founded on a basis of uncompromising honesty. Please bear in mind, that I mean what I say. If you don't want my bee-hives, or territory on my patent, why, that is all right; but for pity's sake, don't hold back because you are afraid of getting beat. Read what is said further on, concerning this; and if you are then in doubt, be kind enough to let me know what sort of a guarantee you do want, and I will see if your case can not be reached.

Only asking for a candid consideration of the points presented, before forming an opinion of my invention or method of doing business, and soliciting your patronage when you think I can benefit you, I remain yours truly, G. K. HUBBARD.



THE HUBBARD BEE-HIVE.

(Pat'd Jan. 16, 1883.)

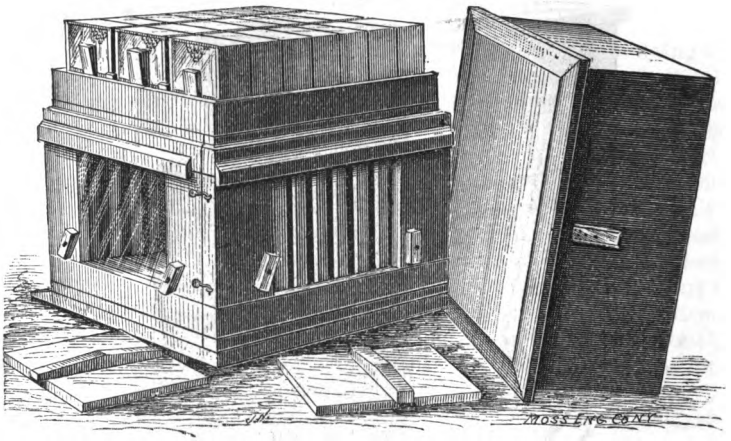
A PRACTICAL COMBINATION OF SIMPLICITY AND CONVENIENCE—ADVANTAGES CLAIMED BY NO OTHER. PRICES REASONABLE.

Says the *Indiana Farmer:* "The adoption of a practical hive is a very important step toward successful bee-keeping. No one can expect to be successful, or compete with his neighbors, without the movable frames. Of course, the simplest form possible, consistent with the object to be attained, should be used."

In laboring to complete and perfect my invention of the Hubbard hive, I have endeavored to bring forth such an invention as would be neat in appearance, practical in use, convenient in manipulation, and simple in construction, and then have all of these certainly desirable features consistent with economy. These hives, when coming from my shop, will be found to be made of thoroughly seasoned whitewood, painted two coats, and smoked, to give them a finished look. The size of the brood-frames is 10 x 13½ inches, outside measure.

Figure 6 gives the outward appearance, showing the front and one side. The top and bottom are each made of one piece, thus leaving no cracks or crevices to harbor vermin or let in rain. There are three ventilators in each hive; two of them are shown in this view of the hive. By means of the strip lying on the alighting-board, the entrance can be increased or diminished at pleasure. By inverting the entrance-board, as it is called, the hive can be closed entirely, or space left for only one bee to pass, and then increased at will, from this to a ¾-inch space full width. During a heavy flow of honey, when there will therefore be no danger of robbing, or when hiving a swarm, this full-

Fig. 7.



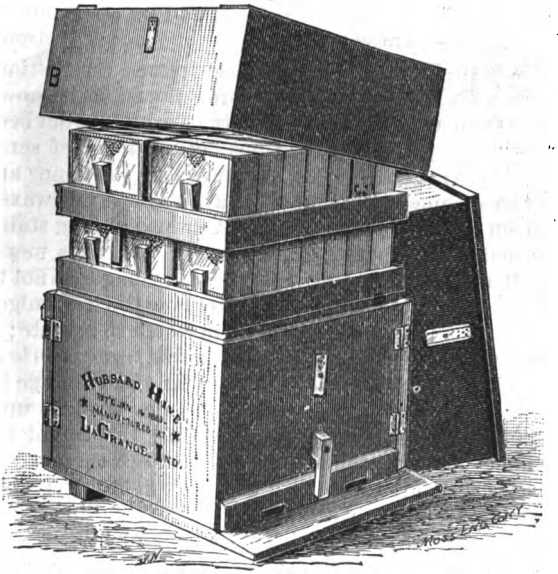
This cut illustrates the case with which you can see what your bees are doing, without either you or the bees being disturbed.

sized entrance should be given. The bottom being fastened to the hive, and this given a slight inclination by means of the strip nailed under the rear, it sheds rain and melted snow, thus keeping the inside dry and healthy. There is also an advantage in this, as the bees can more easily drag out any foreign substance (see "Robbing" and "Bee Moth").

Hives without a bottom are set on a wide board; but this is generally much larger than the hive, and is warped by the sun, thus leaving a space under the edge where the millers can get and the bees can't; and before you are aware, the worms are there ready to attack and possibly destroy your colony. James Heddon gives the full weight of his authority in favor of permanent bottoms. See *American Bee Journal*, March 21, 1883.

Figure 7 gives a view of the hive with the blinds and cover removed, enabling you to see how fast the bees are building comb or storing honey, without disturbing them. To a man who is apt to neglect his bees because of other work, this is a great advantage; for many such a man has had his bees destroyed by moths or robbers, simply because he did not know there was any thing going wrong. Now, he did not know of the trouble, because he was too busy to open his bees all up, merely to ascertain how they were doing; yet had he known it he would gladly have helped them out of the trouble. With bees in as nice a hive as this, you surely would take enough interest in them to peep in every few days and see how they were doing; then if all is well it has cost you nothing, nor has it disturbed them any to find it out; but if any thing does need attention, you would lose no time in assisting them. This is surely much better than a hap-hazard or luck method, resulting from inconvenient hives.

Fig. 8.



This cut illustrates how the surplus-department may be increased at pleasure.

Above the brood-chamber is the crate of sections. These are 4¼ x 4¼ inches, and each holds one pound of honey. Sections holding two pounds each will be furnished if desired; but as they measure 5 x 7 inches, but two rows are put in a crate instead of three. A crate of large sections is shown in Figure 8. Each section is furnished with a starter of comb foundation, so that the bees will build straight. The sections of honey can be taken out singly or an entire crate at a time; or, if the flow of honey is great, and the bees are strong, the

TIERING-UP

Plan should be followed. This is illustrated in Fig. 8. I have had 80 pounds of honey in a hive in this way by putting on three crates. By means of small strips of wood put between the rows of sections in the lower crate, the bees are prevented from getting to the outside of the crate. If you are going to follow the tiering-up method, first let the bees get one crate nearly full, and then raise it up and put an empty crate under. While the top crate is ripening and being capped, they will work hard to fill up the space between the honey and brood-chamber. The wedges between the glass and crate hold the sections in place; but by loosening them you have plenty of space in which to remove the sections, without scraping the honey. A piece of burlap, or some other kind of cloth, should be laid over the sections to keep the bees out of the cover. By far the most popular way of getting comb

honey is in sections; but as some people prefer boxes, I furnish four honey-boxes and a honey-board to set them on when my customers desire (see Fig. 10). These are put on in the place of sections.

When it is desired to lift out the brood-frames, the sections should be set to one side, and the two sides thrown open, as is shown in Fig. 9. This gives you a splendid opportunity to examine your bees, or perform any operation you desire, and not be in danger of scraping the combs together, killing the bees, and breaking the honey and brood. "But," says some one, "the bees will have those doors waxed fast so you can't open them." I say, "No." A swarm of long standing may be thus opened in a moment. Another says, "It takes more time to open a hive that way." The time, if it does take longer, is not to be compared with the advantages, for, no matter how thick or bulged a comb may be, you have all the space you wish in which to operate; however, if you do not wish to open it, don't do it, as *the frames can be removed or replaced without opening the sides.* The great disadvantage in most of the frame hives is in having to lift the frames straight up, when, if the combs are bulged, they will scrape against the tops of the frame, break the honey, and kill some of the bees. With these old-fashioned frame hives, especially those with a wide top-bar, it requires more time and great care to avoid killing bees while handling them. There is very little danger of this in using the Hubbard hive.

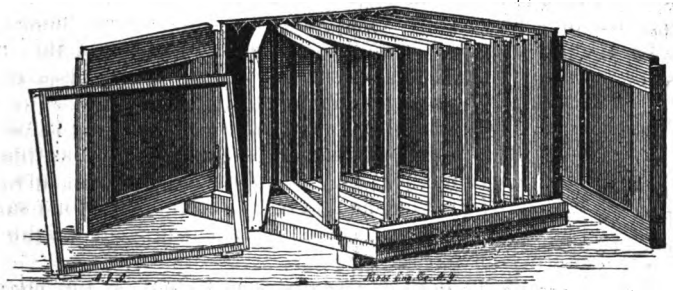
I never appreciate the advantages of my hive so fully as when I have just finished opening up a hive for some one else who uses the ordinary make of hive, and is compelled to lift the frames straight up. The contrast is so great—no pulling, straining, nor scraping—plenty of space to work in; in fact, an arrangement that is *complete.*

The frames are held in place by metal bearings that do not allow the wooden part of the frame to touch the wooden part of the hive; therefore the bees will never wax them fast, and they can at any time be easily removed. Just think of it! no prying, wrenching, nor straining; no killing of bees nor breaking of combs, but frames always easily adjusted.

A nail driven obliquely into the end of the frame rests in a tin notch at the front, and the end of one of the long staples in the bottom drops into another tin notch, while the staple in the other end of the frame rests in a very fine notched tin at the rear, allowing you to change the distance between them.

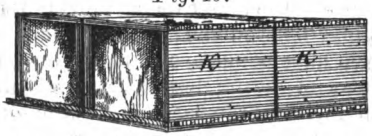
There are several advantages resulting from this method of hanging the frames. The nail with a tin support makes the bearing so small that, practically, all the danger of killing bees when hanging the frames is done away with. Having a support for the frames below, they will not sag against the front, and make a lurking-place for millers, or shake about the hive if you move it. When setting a frame to one side on a plain surface, the staples in the bottom hold it up, so there is no danger of mashing any bees that are clinging to the bottom-bar. There is much being said nowadays about reversible frames and reversible devices. Well, to make my frames reversible, all that

Fig. 9.



is necessary is to put in two more nails and two more staples. It can already be put in, either end to the front, and that would make it also go in, either side up. Bear in mind, the claims for my hive are summed up in one word, CONVENIENCE. I do not claim that bees will make more honey in this than in any thing else, without effort on your part; but I do claim that many succeed better with the Hubbard hive than with any other, because the arrangement is so complete that they do not dread to work with their bees the way they do with unhandy hives; and because of the attention, their bees give a better profit. To review and briefly set forth my claims, let me ask a few simple questions.

Fig. 10.



Is it an advantage—

To have plenty of space in which to operate, and not be compelled to scrape the combs together?

To be able to remove frames without prying, twisting, and wrenching them to get them loose?

To put frames in, either end to the front?

To be in no danger of pinching or killing bees between the top-bars?

To vary the distance between the combs at pleasure?

To have the frame-bearings so small that, when hanging them, there is no danger of killing bees?

To be able to carry a hive any distance without the frames shifting position and thus shake about the hive?

To set a frame on a plain surface without having to brush the bees off the bottom-bar?

To be able to tip your hive forward in time of robbing, without the frames sagging against the front and making a lurking-place for millers, as well as getting waxed perfectly tight to the side of the hive?

To have a hive the rain can not run under and thus make it damp, moldy, and unhealthy?

To be able to tell how strong your bees are, how fast they are building comb, or when to put on surplus-boxes without disturbing the bees a particle, or requiring a minute's time?

If you consider these certainly commendable points of any value to you, they can all be tested by the use of the Hubbard hive, as this is the only hive that contains them all. To appreciate the great advantages of the Hubbard hive, you should give it a trial. Send for a sample hive, and be convinced: or if there is an agent in your neighborhood, get a swarm transferred.

The experiment is not an expensive one, and it may be the means of getting you properly started in the fascinating pursuit of practical bee culture.

The chief claim made for the old-style frame hive is, that they are *cheap*. There is no use to press this point, for we all know they *are* cheap. So is the log cabin cheaper than the brick house or the old-fashioned well-sweep cheaper than the wind-mill. There are also a great many hives that sell much higher than the Hubbard hive does; but, please bear in mind, friends, that my hive is

WORTH ALL YOU PAY FOR IT,

and a great deal *more* than *any other hive* I ever saw or heard of. Even if they cost you $3.50 each for every one you use, this would be only 35 cents a year for the use of a good hive, supposing it lasted but ten years. Remember there are no moldings or useless ornaments to be paid for, but every cent's worth of expense adds to its convenience. If you can nail them together yourself, by purchasing the Hubbard hive in the flat, after you have bought your farm-right, you can actually get the Hubbard hive of me for less than the so-called "cheap" hive manufacturers sell theirs in the flat. The reason of this is, that they rely entirely upon the hive sold for their profit, while I rely upon the farm-rights, and therefore sell the flat hives at a very narrow margin.

HOW THE HIVE IS SOLD.

Having full confidence in the Hubbard hive, I willingly make the following proposition to any responsible man I work for, and shall expect my agents to do the same. "I will transfer a swarm of your bees into my hive by putting the brood, honey, and comb, all nice and straight, into the frames, and all the bees into the hive, with the understanding that you are to pay $5.00 for the hive and work, as soon as satisfied; and if in 30 days you are not satisfied, I will pay you all the damages." It matters not whether your bees are in a log gum, box hive, or one of the numerous patented moth-traps scattered about the country, we shall take pleasure in making a transfer, should any of us ever come into your neighborhood. If several persons club together and order a number of transfers made, I will, if possible, send the nearest agent, or some competent person, to do the work. By the above proposition you see at once that you run no risk whatever; for if you are satisfied, you are, of course, willing to pay; and

if you are not satisfied, you have nothing to pay. You thus have *an opportunity to try the hive before you buy it.*

PRICES.

One sample hive, complete	$ 3.50
Farm-right to manufacture and use	5.00
One hive and farm-right	8.00
One hive to those having the right to use	3.00
Five hives to those having right	13.00
Twenty hives to those having right	50.00

After a customer has bought a farm-right we then expect no royalty or extra profit, but will sell to him at manufacturer's price. This is also the reason you can get hives in the flat so cheap.

A complete hive includes one crate of sections, either size, or four honey-boxes.

All prices given are for goods delivered on board the cars at this place.

One or two hives usually go cheaper by express. If no instructions are given, I will use my best judgment as to which way to ship.

I get special freight rates on the Grand Rapids & Indiana Railroad.

HIVES IN THE FLAT.

Hives in the flat, or in the knock-down, as many say, are hives that are cut out and are ready to nail together.

I have a very large stock of these on hand, made of kiln-dried white-wood lumber, accurately cut. Many of the pieces have gone over six and seven different machines before being finished. The rabbets are cut, holes bored, etc., all ready to put together. They will be sold only to those who have farm-rights. The prices include all the wooden parts of a complete hive, also the notched tins, ventilators, staples for the bottom of the frames, and the strap iron for section-crate bottom. You can have one-pound or two-pound sections, or four honey-boxes, just as you wish.

Five or less in the flat, each	$ 1.35
Six or more in the flat, each	1.25
Twenty hives in the flat	24.00
Fifty hives in the flat	59.00

RINGS, OR EXTENSIONS, FOR TIERING UP.

These are just like the cover without the top-board (see Fig. 8, *b*). Price in the flat, each, 15 cents; nailed and painted, 25 cents.

HARDWARE FOR HIVES.

As complaints have come to me of retail dealers charging my flat-hive customers exorbitant prices for the hardware they needed, I have purchased a large stock of the necessary kinds, and sell it at a very reasonable price. I will furnish you the necessary hinges, hooks, screws, clout nails, wire nails, and glass,—in fact, all the hardware except the common nails and paint,—at 23 cents per hive, or 22 cents

if ordered for twenty or more hives. At these prices the glass is counted at 14 cents per hive; the hinges 3 cents per hive (two pair), wire nails 10 cents per pound, and screws, etc., correspondingly low. The glass will be carefully packed and shipped at buyer's risk. The wire nails are used in nailing together brood-frames. The small clout nails are used in fastening on the tins, and the large ones for riveting the hinges on to the hive. Notched tins, ventilators, and staples, are not included in the price for hardware.

SECTIONS.

Sections, or small honey-frames, are now manufactured and sold by the million. I furnish them made of *white poplar*, all dovetailed, ready to put together. No wood yet used makes a nicer, whiter, cleaner-looking, better-finished section than this. To see one is to fall in love with it. It *pays* to use them too; for the more attractive the honey, the higher is the price paid.

If you buy complete hives, the necessary sections are included; but if you want extra ones, I shall be pleased to sell you any quantity. I furnish them in two sizes only,—the 2-lb., 5 in. x 7 in.; and the 1-lb., 4¼ x 4¼. Width of each, 1 and 15-16 inches. Sample section sent free upon application.

PRICE OF SECTIONS IN THE FLAT.

	4¼x4¼	5x7
Fifty	$ .45	$ .50
One hundred	.70	.85
Three hundred	2.00	2.50
Five hundred	3.25	4.00
One thousand	6.00	7.75

COMPLETE CRATES OF SECTIONS.

A complete crate of 5 x 7 sections includes crate, 14 sections with starters, glass and wedges, all ready to set on a hive. A complete crate of 4¼ x 4¼ sections includes crate, 21 sections with starters, glass, and wedges, ready to set on hive.

One crate of sections complete, either size	.35
Five or more complete crates, either size, each	.32

NOTCHED TINS, ETC.

Those who have farm-rights, and wish to get the tin trimmings, can do so at the following prices:

Notched tins, per set	4 cts.	Postage	4 cts.
Ventilators (3)	1 "	Postage	1 "
Staples for bottom of frames (10)	1 "	Postage	1 "
Staples, per pound (166 in a pound)	12 cents		
Notched tins, per 100 sets	$3.50		

DOORS FOR HUBBARD HIVE.

The work on the swinging doors, as shown in Fig. 9, is as difficult as any of the work on these hives, except the sections; so if you

would rather buy them than to make them, I will sell them to you, accurately nailed together, without glass or hinges, at 12 cents per door, or 10 cents per door (20 cents per hive), if 50 or more are taken.

BROOD-FRAMES AND SECTION-CRATES IN THE FLAT.

Frames, without staples, per hundred.....$ 1.75
Section-crates, without glass or sections, each..... .10

BEE-SMOKERS.

A person can handle bees without a smoker; but why they are willing to when they can buy a good one for so reasonable an amount, is more than I can understand. A person with many bees will often see the time when a smoker is worth its cost in one day's work with them. You can burn rotten wood, cotton rags, corn-cobs—in fact, almost any thing in them, and you will have plenty of smoke, right where you want it, with a good smoker. Price.....75 cents.

COMB FOUNDATION.

This is a thin sheet of pure beeswax, with impressions on each side of it, identical in shape with the bottom of cells made by the bees. It is necessary to use this with the sections to get straight combs.

A heavier quality is used in the brood-chamber than in the surplus-department.

Price, thick foundation, per pound .....55 cents.
" thin " " " .....65 "

PRICE OF BEES IN THE HUBBARD HIVE.

If you have no bees, or wish to improve your stock, you will be making a good investment by purchasing a full colony in the Hubbard hive. A good colony of Italian bees, in first-class condition, in a new Hubbard hive, will be sent to you by express, and safe arrival guaranteed, on receipt of $10.00. So much has been said in the last few years in favor of the new kind of bees that I will not stop to argue the matter here. Suffice it to say, that if there were no other reason why you should have some Italian blood in your apiary except to save annoyance from moths, this alone should persuade you to give them a trial. I do not know why it is, but yet it is a fact, that Italians and hybrids are more vigilant in protecting their home from intruders than the blacks are.

It is a very poor season when a colony of bees will not throw off a profit of 100 per cent. So if you purchase in the spring a colony as good as I should send you for $10.00, there is hardly a possibility of your losing any thing by the investment, with every reason to expect a handsome profit in the long run; especially if they are successfully wintered the first year.

Now, if you want to get started in the business right; if you want bees in a hive so handy that it will be a pleasure to care for them, send me an order. Bees will be shipped by the first of June, or money refunded.

GUARANTEE.

I guarantee satisfaction; and if any transactions in the past have lacked in this, let me know; and any difference, claimed reasonably, will be adjusted.

I can not hold myself responsible for delays in shipping, after the goods are out of my hands, nor for money lost in the mails; but I shall always faithfully account for the money I receive; and in case of any delay in filling your order I will hold myself ready to refund your money if you become impatient. If square dealing on strict business principles will satisfy you, have no fears.

DIRECTIONS FOR OPENING A HUBBARD HIVE CONTAINING BEES.

To remove the blinds, turn the buttons, pull out the lower part of blind, and then push it down until it slips from under the batten on the door. Never try to hinge it up, for you might break the glass.

To get into the brood-chamber, give the bees a few puffs of smoke through the entrance; rap on the hive a little to thoroughly rouse them so they will commence filling themselves with honey, waiting a minute to give them time for this before going further with the work. Then remove the cover by lifting it *straight up;* roll back the cloth enough to blow in a little smoke through the sections, and then remove the entire crate, setting it on edge, or resting it on something in such a way as to not mash the bees on the under side of it. Then open the sides; but if robbers are annoying, do not open very wide. Swing the frames around; and when you know by experience how easy it is to thus remove brood-combs, you will not wonder that the Hubbard hive makes friends on every hand. If the bees show fight, smoke them enough so they will realize that you are master of the situation; and if it is during a heavy flow of honey, it is a small matter to do that.

In hanging a frame, see that you get it hung right at the top, and the bottom will place itself. Swing the rear end around to the desired distance. You will here realize the value of these patent frame-hangings, for the nail at the top will slip into place if you get it near where it belongs, with no danger of killing bees, and the lower hanging is fully as easy.

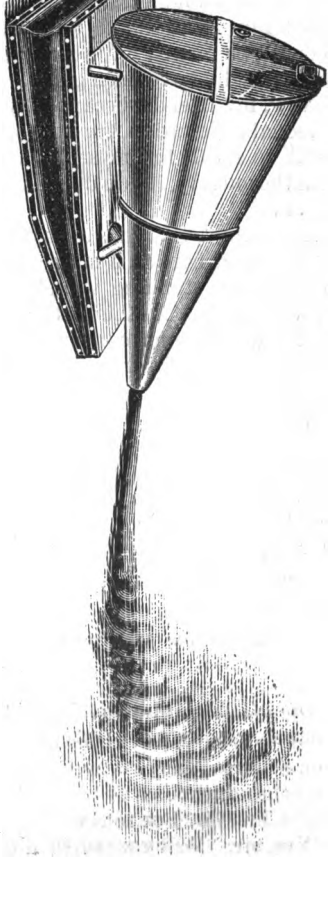
When closing the hive, brush the bees, with a wing or tuft of grass, away from around the hinges, or where the doors come together, to prevent killing any; and in putting on the section crate, exercise a similar precaution.

If you wish only to take off honey, you can drive the bees down with smoke, lift off the crate, and brush all the bees you can from the under side and carry it away, leaving an empty crate in its place, if the honey-flow has not ceased. If the honey is carried into a dark room or cellar with a small opening, the remaining bees will fly toward the light, and go back to the hive. If you remove only part of the sections, brush or blow the bees from those you take, and put in empty

ones in their place. Do not leave an uncapped section of honey next to an empty section, for the bees will be almost certain to build it out to an improper thickness, because they are not restricted by another comb. The outside sections will be completed last. Take off the honey as soon as it is completed. With glass at each end of each row of sections, it is not at all difficult to tell when to take honey.

In all your manipulations, be careful and easy in your movements, without fighting and jerking; and if a convenient bee-hive is all you lacked before, you need look no further, after getting the "Hubbard."

AVOID THE STINGS!



A GOOD COLD-BLAST SMOKER FOR 75 CENTS.

Next to a good bee-hive, a good smoker is of the greatest importance; for with it bees can be handled much more rapidly than without, and the greater part of the danger of being stung is removed.

My idea of a good smoker is one that is easily lighted, will give plenty of smoke when desired, give a current of cold air, and will not go out if set down for a few moments.

THE ABOVE CUT IS A GOOD VIEW OF JUST SUCH A SMOKER.

Price 75 cents. It will be sent by mail to any address in the United States on receipt of price.

C. K. HUBBARD, LA GRANGE, IND.

SQUARE DEALING.

Many persons receiving this book, and many others when meeting me or my agents while working among strangers, will give a suspicious look, and say, "That is some fine-sounding scheme. I have seen nicely printed circulars and easy talkers before," or give vent to some similar sentence, which means, because some dishonest men handle patents, they are willing to believe, without one iota of proof, that this is some new game. It is much easier to glance at this page with a sneer, or mutter an insinuating "be careful" to an acquaintance, as well as infinitely more contemptuous, than it is to come up like a man, and say, "Mr. Hubbard (or Mr. Agent), I am suspicious of there being something crooked about this hive business, and I should like to have a few references." There is some satisfaction in spending time with a man who will take the latter course. But, alas! how many an honest, hard-working man, whose positive duties separated him from friends and associates, has received thrusts that cut deep into a refined nature, and that, too, when a satisfactory guarantee would gladly have been given.

Now, my friends, because dishonest men, by means of circulars and personal solicitation, try to get your money without an equivalent, I want to speak for myself a little, and ask that you search this question thoroughly, if you doubt the genuineness of the recommendations given.

La Grange, Ind., has always been my home; and as I am about as well known here as a man can be, a good way to satisfy yourself concerning my standing would be to write to some citizen here, and make inquiry. As this is the county-seat of La Grange County, you could address some county officer, or the First National Bank; or, if you prefer, I will send you a county paper, and you will then have the names of our leading business men, any of whom would, I think, willingly answer your communication. You are also invited to write to any person whose name appears among the testimonials given. If you do not wish to spend the time necessarily used in getting a reply by mail, just telegraph. The business-like way in which the following gentleman in Ohio went at this matter, is certainly commendable. Here is a copy of two telegrams that will explain themselves; and if you have any doubts in regard to their genuineness, just address either of the parties.

WILLSHIRE, O., Aug. 29, 1885.

TO JACOB NEWMAN,
County Clerk,
La Grange, Ind.:

Does G. K. Hubbard, "the bee-man," have a good reputation at home for honesty and integrity? WM. FOREMAN.

LA GRANGE, IND., Aug. 29, 1885.

TO WM. FOREMAN, Willshire, Ohio:

Yes, sir. Will guarantee him all right, in all respects mentioned.
JACOB NEWMAN, *County Clerk*.

Here is an item taken from the La Grange *Standard*, Sept. 10, 1885:

"G. K. Hubbard, the bee-hive man, has just ordered from this office a large lot of printed matter, advertising his popular invention. He is doing a patent-right business, but we can assure all who deal with him that they will find him honest and reliable, and their confidence not misplaced."

Here is another newspaper item, copied from a paper published at Ennis, Ellis Co., Texas, a place where I was located for nearly two months in the spring of 1885:

"G. K. Hubbard, better known as the 'bee-man,' started to-day for his home in Indiana. He has succeeded in awakening a good deal of interest here in progressive bee culture, and made his stay with us profitable also, having sold about $4000 worth of territory on his patent hive. Some of our best citizens and leading business men have taken hold of his work. As the people seem pleased, and the business is conducted on a strictly honorable basis, we certainly wish him and his agents the best of success."—*Ennis Saturday Review*, May 9.

The following may have some weight with those who know how sparing banks usually are with their compliments:

ADAMS COUNTY BANK,
DECATUR, IND., NOV. 30, 1884.

To whom it may concern:—We are acquainted with Mr. G. K. Hubbard, of La Grange, Ind., who has a patent bee-hive, which he has been selling in our county to some of our best farmers; and so far as we have heard and know, they have given satisfaction, and parties seem well pleased with them; and we have had some dealings, amounting to $200 or $300, with him, and have found him reliable and honorable.

W. H. NIBLICK, *Cashier.*

I also have many letters containing complimentary remarks; but if these, with the testimonials given on the following pages, are not sufficient, you can write or telegraph, and get those you can trust.

I am always willing to make the following proposition when away from home, and a person wants a recommendation on short notice, without trusting my letters or circulars. Go to a telegraph office, and deposit the necessary amount for receiving a reply from one of our leading citizens, or some of my customers, and I will also make a deposit, but of five times that amount, and if you don't get an answer favorable to me, you may have the pile for your trouble and expense.

Now, surely, this is enough on this point; so let me close this article by saying, that I try to make a friend of each customer; and if you think there is any reason why agreeable transactions could not pass between us, I will then say to you plainly, I do not want your patronage. Notwithstanding the bluntness of this statement, believe me.

Yours sincerely,
G. K. HUBBARD.

AGENTS.

While the dictionary will hardly bear me out in this construction, I nevertheless speak of those who buy territory of me as my agents; and when advertising and working for agents, I mean that I want persons who are willing to make a little investment in the business in the way of township, county, or State rights, and take up the work and push it.

I doubt not but there are articles you could take up, from which you would make more "quick money" or rapid sales for a few days. than you could with my hive; but to a man who is willing to look further ahead than the present day's need, the argument will have due consideration, when I remind you that in this work you not only make big wages while working it up, but at the same time are establishing

A GOOD GROWING BUSINESS.

To substantiate this statement, both reason and experience come to my assistance.

If you sell a man a hive or two, and he is well satisfied, do you suppose he will continue his former method of bee-keeping? Candidly, now, don't you think there is a strong probability of your getting his order for hives for his old stocks and increase, as well as having his influence in helping to sell to his neighbors? Now, some one answers, "Yes; but I don't know that your hive will give satisfaction." Well, then, my friend, you have no business to take up the hive work. The first thing you ought to do, is to satisfy yourself on that point; and if that is impossible, you can do neither yourself nor me any good in the business. But remember, that if you do go into it, you have a great advantage over an agent handling such things as churns, washing-machines, pumps, fanning-mills, etc., for these articles are sold only one in a place, and that one lasts for several years, while the natural increase in the bees will require more hives.

Now in regard to experience in this matter, let me refer to Adams Co., Ind. In the spring of 1883, forty of my hives were shipped into the county and sold by another man; but next year I did without his services, and my shipments into the county gave a profit of over $60 before the middle of June, and then I went there and stayed two weeks; and, notwithstanding bad weather, I cleared $60 more; and this year closed out the county-right, receiving for the territory an amount that would make Indiana alone come to nearly $20,000, if closed out at the same rate. Several persons are interested in the territory; but all of them had either used the hive, or knew it well by reputation, before investing in the territory.

In the spring of 1885, Mr. John Rupright, one of the county commissioners, bought a farm-right and 15 hives for his own use, and in December bought 75 more in the flat. Many of the very best and most influential farmers in the county are using my hive; and as it is becoming more and more popular, the agents have a right to expect, as they do, a very large trade in the future. But this is not all; its reputation is spreading to the surrounding counties, making them more

valuable; and this illustrates, also, how, where a man owns a large amount of territory, not only his retail sales increase, but his territory advances in value, and makes it much easier to "small" it out in township and county rights at good prices.

One other similar illustration can be given of Casey Co., Kentucky, which all goes to show that the Hubbard hive not only gives satisfaction, and stands the test, but that the trade will grow, even when heavy transportation rates help to keep it down.

In the spring of 1884, I sold hives to five persons near Shermanville; but one of them became dissatisfied because of his unsuccessful attempt at transferring, and then sold his hive for the sum of four dollars to one of the others, thus leaving four customers. These persons were so well pleased that, in the spring of 1885, when I stopped off on my way home from Texas, I sold sixty-five dollars' worth of hives and farm-rights in one day to their neighbors, including three hives to one of my former customers, and that, too, by riding around to their houses on horseback, and working without any sample, relying entirely upon the reputation of my invention, and not upon the interest I might awaken by exhibiting its advantages. Mr. Wm. H. Butt was with me that day, as well as the few days following, and can substantiate these facts if you doubt them, and can give you further information concerning the growth of my trade and the profitable results obtained from the improved method of bee-keeping, arising from the use of this hive. But that is not all: One of the wide-awake business men of Casey County, Mr. J. B. Wesley, a manufacturer and dealer in lumber, seeing the drift matters were taking, and the large business that could be built up by some one who lived there and could thus give the matter proper attention, wrote to me in June, and got prices on the territory, and July 8th he replied:

G. K. HUBBARD, *Dear Sir*:—Yours received and noted. Will say that I will take Adair and Casey rights at your proposition.

J. B. WESLEY.

Now, ponder over this, you who are skeptical, and especially you who have a sneer ever ready for a patent-right business. Here is a patent popular enough so that bargains have been made and closed (for this is not the first time it has happened in my experience), while the parties were hundreds of miles apart, and it was, in fact, the genuine worth of the article that made the sale, and not fine talk or beautifully built air-castles.

Here are some testimonials carrying this argument still further:

ENNIS, TEXAS, May 8, 1885.

Mr. G. K. Hubbard: You ask me if I can give you a recommendation. Most certainly I can, both for your bee-hive and your method of doing business. Your hive certainly is a success, and is what you represent it to be, and I could not ask a man to be more honorable in his dealings than you have been. I have made from $5 to $10 a day peddling bee-hives and rights, and give good satisfaction, and I am

well pleased with the business. If this is not a strong enough recommendation, let people write to me and get further particulars.

Respectfully, D. Y. MONCRIEF.

OFFICE OF TRUSTEE, KIRTLAND TOWNSHIP,
ADAMS CO., IND., Oct. 9, 1884.

G. K. Hubbard:—When I purchased the right of the "Hubbard" hive for this township last spring there were but eleven persons who had bees in my territory; but since the introduction of your convenient hive, greater interest is taken in bee-keeping, and twenty or more persons are now keeping them, and in a much more profitable way than heretofore. Before purchasing the agency, enough of my neighbors promised to buy farm rights to clear me on the territory; and since making that I have cleared $40.00 on farm rights, and sold 55 hives. Considering how busy I have been with my farm and other work, and how small an amount of time I have given to the hive business, I consider that quite good, besides getting a profitable trade started for the future.

For territory, hive material, etc., I have paid you over $125.00, every cent of which has been honestly accounted for, and I believe you have done all you promised, even to the smallest items in our transactions.

DAVID STEELE.

DECATUR, IND., Nov. 24, 1884.

G. K. Hubbard:—In reply to yours of the 22d inst., I will say that I have no reason to regret that I purchased territory on your patent hive, for I have done quite well, considering how poor the season has been. The introduction of your hive in this community has been a wonderful help in developing bee culture, and is giving such good satisfaction that it would be next to impossible to sell any other hive at the same price. Besides complimenting your hive, let me further say that I am well satisfied with the dealings between us, and think it would be greatly to your advantage if all bee-keepers could have the privilege of becoming personally acquainted with you the way I have.

CHARLES F. FUELLING.

Here is an extract from a letter I received from one agent who commenced the business late in the fall of 1885:

MERCER, O., Nov. 26, 1885.

G. K. Hubbard:—I have sold one township, and enough more have promised to buy farm-rights and hives to more than clear us on our county, and have a good per cent left. I have not devoted all my time to it either. You can bet I do not feel at all discouraged. Wishing you good luck, I remain as ever

Your friend, F. H. HAYS.

Here is a summing-up of the matter: An agency for my hive can make you a nice business, because it will give you a satisfied lot of customers, a growing trade, and a nice profit; and if you are so situated that you could take it up and give it a reasonable amount of

attention, I should like to have you seriously think over the question, provided you are the kind of a man I want; but no one need apply for territory who would be unwilling to give testimonials in regard to his integrity, in case they were asked. I want it distinctly understood, that no swindling shall be carried on with this hive while it is in my power to prevent it. I want good, earnest, reliable men; and if you, my reader, will answer that description, would it not be wise on your part to inquire further into this matter, inform yourself on the method of procedure, and become interested in this business, which promises you financial success on a small sum invested?

An answer like this is sometimes made: "I don't like the idea of putting money into a right." Why should you object to putting capital into this business, any more than any other? A farmer will invest a hundred dollars or so in a horse, and there is absolutely no certainty about the length of its life; but you know, when buying territory on my hive, that your right is good until the year 1900; but, like the horse, if you do not work it after buying, you will receive no profit. In buying any patent, first satisfy yourself that it is practical, and will prove profitable, and then be sure you want it, and, having procured it, work it strong, remembering that "things done by halves are never done right."

The invested amount required in the business is very small compared with what can be made, if proper efforts are put forth. The sale of two hives and farm-rights in each township will more than clear you on your county-right, if you have bought the territory; and if your county has not enough bees in it to make this a very small per cent of the business you can do, why, you can buy it at what it is worth. I do not want more than that, for in the long run it will not pay to do an overcharging business. If you buy a State right, the sale of a few counties will set you even, and you then have a very large tract of territory left for your profit. Twenty-five good counties, closed out by townships, ought to bring, at a low estimate, $6000, for I have been written to for territory at rates nearly double this.

The following, then, can be justly claimed as good reasons for procuring an agency for the Hubbard hive.

1. The business is *agreeable*, because you satisfy your customers and make friends of them.

2. It is a *paying* business, because of the large number of sales you make, and the liberal per cent cleared.

3. It is a business that *grows* as the number of customers increases, and you can continue selling to those who have bought.

4. You get the *exclusive* right, and it is thus illegal for those in your territory to use the hive without patronizing you.

5. It is a *permanent* business, because the patent was granted for 17 years.

It takes a *small investment.*

In addition to these six prominent reasons, it might be well to mention that, in this work, you have the advantage of outdoor employ-

ment, of working for yourself, of helping to develop a great industry, and of becoming acquainted with the wonderful instincts and habits of the busy little insect which delights and confounds us at every turn.

If, with such an understanding of the matter, you should feel interested enough to make further investigation, I will gladly answer your inquiries. Yours for Bees and Business,

G. K. HUBBARD.

FACTS TO REMEMBER.

It does not pay to use poor bee-hives.

My guarantee is worth all the words imply.

You may see the time when a bee-smoker would be worth more than 75 cents in one manipulation.

I take special pains to ship goods by the route that will be the least expensive to my customers.

The Hubbard hive is no experiment, for it has been thoroughly tried, and the verdict has been pronounced in its favor.

You can make remittances to me by postoffice money order, express money order, registered letter, or bank draft. Drafts are preferred.

After getting the farm-right you can make your hives, or buy them in the flat, so that you will be at an expense of hardly 15 cents per year for each hive.

I shall consider it a special favor, when you are writing, if you will send me the names and addresses of those whom you think would be interested in receiving my circulars.

If you take the agency of the Hubbard hive, and introduce a few of them, you will find that its reputation aids greatly in making more sales. One of the substantial farmers of this (La Grange) County, living ten miles from here, had a swarm of bees come out about three o'clock one afternoon, and he left the bees hanging, hitched up, and drove to my shop for a hive, and hived them in it next morning.

The ordinary patent-right agent is "here to-day and somewhere else to-morrow," and is never heard from by any one in your community afterward; but, remember the difference between such a method and the one I pursue. My permanent address is La Grange, Indiana; and any one who wishes to hear from me can do so by addressing me at that place. No matter if I should be away from home, you can yet place as much confidence in receiving an answer to your communication as can be placed in the mails. I am always glad to hear from my customers, and get reports of their success, or offer suggestions if any thing goes wrong.

TESTIMONIALS.

Perhaps one of the best proofs of the merits of my hive is this: After inventing it I sent out 35 of them to as many different persons, with the understanding that, if they were satisfied with the hive, after using it all summer, they would send $3.50 in payment for the same in the fall; but if not satisfied, it should be returned at my expense.

ONLY ONE OF THOSE HIVES WAS SENT BACK, and all are paid for except one. You thus see that I ran all the risks of dishonesty, carelessness, and ignorance, and put out my hive STRICTLY ON ITS OWN MERITS. This surely emphasizes what I have said before about its being the real worth of my hive that makes it so popular.

Here are some extracts from business letters and three or four solicited testimonials:

AUSTIN, O., Sept. 22, 1884.

I am well pleased with the hive.

HENRY ULLRICK.

EUBANKS, KY., Sept. 4, 1885.

I am well pleased with your hive.

SHADRACK BLEVINS.

BENTON HARBOR, MICH., Sept. 15, 1884.

G. K. Hubbard:—I am well pleased with it.

JOHN NOE.

BINGEN, IND., July 17, 1884.

My colony of bees is doing finely that I put in the new hive.

MRS. R. A. HOUK.

GRAND RAPIDS, O., Sept. 25, 1884.

I want some more hives next spring, and want a farm-right, if some of my neighbors don't buy the township. W. A. KINNEY.

BRIGHT, KY., Aug. 1, 1884.

My bees are doing extra well. Am well pleased with my hives, and expect in the spring to order several more. G. W. DEBOARD.

BRUSHY PRAIRIE, IND., NOV. 23, 1884.

G. K. Hubbard:—I am well pleased with your hive from my experience this season, and cheerfully recommend its adoption by other bee-keepers. BURNELL SMITH.

GANZE, TEXAS, July 12, 1885.

G. K. Hubbard:—My bees are doing very well, especially in your hives. I will take a right, payable Jan. 1, 1886, if that will suit you.

D. D. FOWLER.

ADYVILLE, PERRY CO., IND., Sept. 24, 1883.

I am well pleased with your hive. I had it open every few days since I put bees in it, and I have never hurt a bee. A. R. HUNTER.

FAIRMOUNT, IND., Jan. 11, 1886.

We are meeting with good success. The Hubbard hive is ahead, and gives good satisfaction. Sold fifteen in three days. Expect to sell 400 or 500 next season. SHEPARD & YOUNG.

MT. IDA, KAN., Nov. 28, 1884.

G. K. Hubbard:—I have used your hive for two seasons, and like it very much. I consider your patented features a great benefit in hand-

ling bees. I think you have admirably combined simplicity and convenience in its construction. DANIEL KAUB.

CROMWELL, IND., Nov. 25, 1884.

G. K. Hubbard:—Inclosed find $12.00. You have shown me much kindness, and I extend to you many thanks for it. We were entire strangers to each other. You have acted the gentleman with me, and I shall do the same with you. S. W. HURSEY.

BRIGHTON, IND., Nov. 25, 1884.

Mr. G. K. Hubbard:—I have used the American, Hill, and Mitchell hives, and even bought the right of the Fyfe; but I like none of them as well as the Hubbard hive. I think the money I have paid for your hives, and the right, has been well expended. C. A. SHATTUCK.

MONMOUTH, IND., July 11, 1885.

G. K. Hubbard:—I would say, in regard to the Hubbard hive, that it is unquestionably the most convenient of any I ever saw; and as I can get about twice the profit from my bees that I can when in any thing else, I consider that it pays me well to use it.

JOSEPH E. MANN.

SHERMANVILLE, KY., June 27, 1884.

G. K. Hubbard:—Inclosed find $9.00. I made it by selling the product of one hive. I am very well pleased with the hives. I have used all, and could have used two more. I am called a great bee-man now. My name is second Hubbard. I preach the Hubbard hive wherever I go. WM. H. BUTT.

DECATUR, IND., Dec. 27, 1883.

I now have all my bees in the Hubbard hive, and am well pleased. I have kept bees for forty-seven years, and never realized the pleasure or profit from them that I have since adopting the Hubbard hive. All of my neighbors using it also speak highly of it. I order to-day a dozen more. JOHN H. FILLING.

OFFICE OF TRUSTEE, NILES TOWNSHIP,
DELAWARE CO., IND., June 24, 1884.

G. K. Hubbard:—I have been engaged in the sale of, and have used several patent hives, and have never found any thing that enables me to have so complete control of my bees, with so little labor, as I have had in the use of yours. Last season I took 80 pounds of nice comb honey from a new swarm put into one of your hives, which was more than eight other colonies in old-fashioned hives gave during the same time. If convenience and practicability are commendable points in a bee-hive, no one need hesitate to recommend the Hubbard hive.

SAM. MCDONALD.

HILLSBORO, IND., June 25, 1884.

G. K. Hubbard:—I expect to patronize you in the future. All those

I sold to, say they must have some more Hubbard hives. Please accept thanks. CHAS. STARNS.

Nov. 23, 1885.

I have used your hive for two years, and like it very much. I consider your invention a great benefit in handling bees. My bees in the Hubbard hive wintered all right, and gave a good profit in bees and honey. One of my neighbors put a new swarm in one of your hives this season, and they cast a swarm and made 64 pounds of comb honey. He says he wants none but Hubbard hives. CHAS. STARNS.

While I was in Temple, Texas, a gentleman fearing that there might be some misrepresentation about my hive, addressed a letter of inquiry to one of my customers, and here is the reply he received:

PETERSON, IND., Jan. 20, 1885.

Mr. N. C. Smith:—In regard to the hives used here, we first used the Langstroth; next the Diehl, and then the Hubbard; but the Hubbard takes the lead. There is more interest taken in bee culture here since it has been introduced, than there was for 20 years before. We can't keep bees in the old-fashioned hive any more, on account of the worms, and then the honey brings only ten cents a pound, while if we have it in sections we can get twenty to twenty-five cents per pound. DAVID STEELE.

Address all communications to

G. K. HUBBARD,
LA GRANGE, IND.

USE THE

HUBBARD BEE-HIVE.

You Will Appreciate its Advantages.

PROCURE AN AGENCY

FOR THIS HIVE.

IT WILL PAY YOU.